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ORAL PRESENTATIONS
Esophageal Cancer in Khorasan Province
Roham Salek 1
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Abstract
Esophageal cancer is the eighth most common cancer worldwide. There are more than 20-fold differences in incidence between the different regions of the world, with rates ranging from 0.2 per 100,000 in women of Polynesia to 17 per 100,000 in males in Eastern Asia. Esophageal cancer with 2584 new cases was the 5th most common cancers in Iran after gastric, breast, colon and bladder cancers. With 509 cases it was the second most common cancer in Khorasan province, among males after gastric cancer and among females after breast cancer. According to Iranian annual of national cancer registration report 2008, age specific incidence rates (ASR) of esophageal cancer are in males 10 and in females 12.7 in Khorasan province. Worldwide, esophageal cancer incidence rates in males are more than two-fold those in females. However, the incidence of esophageal cancer among females in Khorasan province is fairly equal to males. The most common etiologic factors of esophageal cancer are smoking and alcohol worldwide. In Iran a variety of potential etiologic factors have been considered including: smoking, opium, hot beverages, malnutrition and low socioeconomic status. The esophageal cancers are among the direst cancer worldwide, and their mortality rates closely follow their incidence rates. Five-year survival rates generally are reported less than 15% in western countries. This is not true in Khorasan. According to a few studies the 5-year overall survival (OS) is about 42% for in this region. The survival rates are even more than 48% among some groups and lower stages of disease. Although trimodality treatment combining chemotherapy and radiotherapy with surgery has been presented the best approach of treatment of locally advanced esophageal cancers, however, at least a study has reported equal outcome after chemo-radiotherapy compared with surgery or trimodality treatment. Overall, esophageal cancer in the region of Northeastern Iran seems epidemiologically and etiologically different from the common esophageal cancer worldwide and its outcome seems to be better.

Keywords: Esophageal Cancer, Outcome, Khorasan

Treatment of Pancreatic Cancer
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Abstract
Pancreatic cancer is the one of the most lethal malignancies, and is the 10th common cancer in general population. The majority of cases with pancreatic carcinoma had advanced disease at diagnosis. Pancreatic cancer is the cancer of old age and rarely occurred in lower than 40 years old. In overall, pancreatic cancer had two major type in 80% of all cases Exocrine malignancy(adenocarcinoma) and other type is endocrine tumors as called neuroendocrine tumors(PNET). Pancreatic cancer had many risk factors such as: cigar, diabetes, pancreatitis, nutritional and... Therapeutic approach of pancreatic cancer is multiciplinary and treatment team are combination of surgeon, radiotherapist and medical oncologist. The aim of this lecture is the review of therapeutic approaches in pancreatic cancer.

Keywords: Pancreatic Cancer

Treating the “Person” with Cancer: The Role of Psychology and Social Work in Oncology
Peter J. Norton, 1, 2 and Erika L. Thompson, MSW 2
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Abstract
Despite medical advances in treating many forms of cancer, the short- and long-term psychosocial needs remain an essential part of treatment and recovery. Roughly two-thirds of patients with cancer experience long-term psychological distress, and half of those meet diagnostic criteria for a psychological disorder following their cancer diagnosis. Successful management of the psychological needs of cancer patients has a positive impact on both psychological functioning as well their physical response to cancer treatment. Psychological treatment options and social care needs to address the challenges faced by cancer patients will be reviewed, and multidisciplinary practice recommendations will be offered.

Keywords: Psychology, Social Work, Oncology

Cancer Pain Management
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Abstract
Up to 40% of cancer pain needs combination therapy with opioids + adjuvant analgesics as pain is only semiresponsive to opioid therapy alone. (Caraceni et al 1999) Adjuvant analgesics are defined as drugs with a primary indication other than pain that have analgesic properties in some painful conditions. In cancer pain, adjuvant analgesics almost always used in combination with other analgesics.
Use of adjuvants in cancer pain largely extrapolated from data in non-malignant pain. Some adjuvant analgesics are useful in several painful conditions and are described as multipurpose adjuvant analgesics, whereas others are specific for neuropathic pain, bone pain, musculoskeletal pain or pain from bowel obstruction.

Keywords: Cancer Pain

Pain Management in Palliative Care

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Abstract

Introduction: Cancer related pain is a big challenge during palliative care for cancer patients. As the disease progresses pain management will be more complicated in terminally ill patients. There are many pharmacological and non-pharmacological treatments for pain management but the aim of this article is to review mile stones of common medications and interventions for cancer pain management.

Methods: Cancer pain is usually a complex of neuropathic and nociceptive pain. Besides, psychological stress and basic derangements due to the nature of the disease and metastatic complications influence pain sensation. Pain management in palliative care usually commences with pain killers from different categories like NSAIDS, TCA, Anticonvolusants and opioids. Moreover, referring for a psychological consult early in the course of the disease should be considered.

Most interventions for pain management are better not to postpone late in the course of the treatment because they often can subside pain and agony and diminish multi drugs consumption and complications. Neurolytic pain procedures can be achieved by Radiofrequency (RF) ablation methods or injection of neurolytic agents like Alcohol or phenol. RF implication or neurolytic agent injection in or around visceral nerve plexuses like celiac ganglion or splancnic nerves have been accompanied with good results and acceptable complications.

Conclusion: The main propose of this article is to introduce a different dimension of pain clinics in palliative care. Timely application of the procedures can influence life quality and disease process as well. Discussing about the more frequent pain procedures in cancer patients can elucidate the process.

Keywords: Pain Management, Palliative Care

Nutritional Management in Cancer Patients

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Abstract

Malnutrition is a common phenomenon among patients with cancer. However, it is frequently ignored in cancer treatments and follow-ups. According to WHO estimates in 2015, cancers currently cause more deaths than the coronary heart disease and stroke. Furthermore, in Iran cancer is the most public health problem with annually more than 50000 new cases. In our country, it accounts for 30000 deaths per year. (1)

In a study by author, the prevalence of malnutrition in Iranian patients was 80% out of which 53% had moderate and 27% had severe malnutrition.

The common cause of cancer nutritional related problems in cancer patients are difficulty in chewing and swallowing, nausea and vomiting, anorexia and early satiety, xerostomia and changes in smell and taste and depression. In the author’s study in Iran, the commonest factors inducing nutritional symptoms were dry mouth, depression and anorexia.

Malnutrition has been associated with a number of clinical consequences, including reduced quality of life, decreased response to treatment, increased risk of chemotherapy-induced toxicity and a reduction in survival. In addition, malnutrition affects normal functioning of organ systems, and even the organism as a whole. Thus debilitating morbidities may significantly affect the patient’s well-being. Malnutrition/weight loss is related to a lower survival, poor response and decreased tolerance to anti-cancer therapy. The treatment prognosis of patients with cancer is directly related to the severity of weight loss. It has been observed that 5% weight loss during 6 months increases the incidence of treatment related problems. Without proper screening, more than half of the patients are neither recognized as being at the risk of malnutrition nor be referred to receive treatment.

Keywords: Nutrition, Cancer, Malnutrition

Physical Training & Cancer

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Abstract

A common feature of many forms of cancer, though, is weight loss, including loss of muscle mass, and fatigue and reduced physical functioning as a result of reduced fitness and muscle atrophy. The general feeling of being unwell, poor appetite, demanding treatment regimens (surgery, chemotherapy, radiotherapy and other treatments or combinations hereof) and difficult circumstances in daily life lead to physical inactivity. Chemotherapy entails an enhanced risk of infections and contributes to physical inactivity and hence to loss of muscle mass and reduced fitness. It has been estimated that as much as one-third of the poor physical condition of cancer patients can be attributed to physical inactivity (Dietz, 1981).

Fatigue is a symptom that is not solely associated with patients with active or advanced cancer, but is also found in radically treated patients (Loge et al., 1999). Cancer affects the patient’s quality of life, and attention is now increasingly being accorded to the significance of physical activity for the functioning and quality of life of cancer patients (Thune, 1998; Courneya & Friedenreich, 1999; Courneya et al., 2000; Dimeo, 2001).
Evidence for physical training: There is increasing epidemiological evidence that a physically active lifestyle protects against the development of colon cancer and breast cancer (Thune & Furberg, 2000). A prospective observational study based on responses from 2097 female registered nurses diagnosed with stage I, II or III breast cancer found that physical activity after diagnosis of breast cancer may reduce the risk of death from the disease. The greatest benefit was seen in women who performed the equivalent of walking 3-5 h/week at an average pace, with little evidence of a correlation between increased benefit and greater energy expenditure (Holmes et al., 2005). The aim of physical training cancer patients is the positive effect on fitness, muscle strength, physical well-being, anxiety, depression and quality of life in the widest sense.

Type and amount of training: The physical training has to be individualized and supervised and include both aerobic training and strength conditioning. Cancer patients who have completed treatment are characteristically tired and physically and possibly also mentally weakened. We recommend aerobic physical activity starting with low intensity and gradually increasing to moderate intensity while concomitantly increasing the duration of the physical activity. The aerobic training is combined with strength conditioning, which is also started at low intensity and in small amounts. The group of cancer patients undergoing treatment is so heterogeneous that we have to restrict ourselves to mentioning that supervised training can be carried out, but that relative or absolute contraindications must be considered.

Possible mechanisms: Physical activity improves fitness and muscle strength, which alleviates fatigue and enhances physical functioning. It is possible that physical training enhances the patient's self-confidence and physical well-being.

Contraindications: Patients undergoing chemotherapy or radiotherapy with a leukocyte concentration below 0.5 - 10 [I], hemoglobin below 6 mmol/L, thrombocyte concentration below 20 - 109/L and temperature above 38 °C should not engage in physical training. Patients with bone metastases should not perform strength conditioning at high load. In cases of infection, a pause in training is recommended until the patient has been asymptomatic for a day whereafter training can be slowly resumed.

Keywords: Physical Training, Cancer

The Rule of PSMA PET/CT in Prostate Carcinoma.

N.Norouzbeigi, and F.Emami

Abstract

Prostate cancer is the most common cancer and second leading cause of cancer death in men. For localized prostate cancer, treatment typically includes radical prostatectomy, external beam radiation therapy (EBRT), brachytherapy, or watchful waiting. Prostate-specific membrane antigen (PSMA), a transmembrane protein that has considerable overexpression on most prostate cancer cells, used as a target molecule for imaging. Several small compounds for labeling PSMA have been developed and 68Ga-PSMA-PET proved to be superior to standard routine imaging particularly in the recurrent prostate cancer setting. Further, PSMA ligands provide options for therapy based on the distribution of disease identified by PET/CT. In this presentation, the audience will be aware of the most appropriate impression of PSMA PET/CT in each clinical condition in patient with prostate cancer.

Keywords: PSMA PET/CT, Prostate Cancer

BI-RADS Classification for Management of Imaging Findings

Donia Farrokh

Abstract

The Breast Imaging Reporting and Data System (BI-RADS), developed by the American College of Radiology, provides a standardized classification for mammographic studies. This system demonstrates good correlation with the likelihood of breast malignancy. The BI-RADS system can inform family physicians about key findings, identify appropriate follow-up and management and encourage the provision of educational and emotional support to patients. The Breast Imaging Reporting and Data System (BI-RADS) was developed in 1993 by the American College of Radiology (ACR) to standardize mammographic reporting, to improve communication, to reduce confusion regarding mammographic findings, to aid research, and to facilitate outcomes monitoring.

<table>
<thead>
<tr>
<th>Final Assessment Categories</th>
<th>Management</th>
<th>Likelihood of Cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need additional imaging and/or await prior examinations</td>
<td>Recall for additional imaging and/or await prior examinations</td>
<td>N/A</td>
</tr>
<tr>
<td>Negative</td>
<td>Routine screening</td>
<td>Essentially 0%</td>
</tr>
<tr>
<td>Benign</td>
<td>Routine screening</td>
<td>Essentially 0%</td>
</tr>
<tr>
<td>Probably Benign</td>
<td>Short Interval-follow-up (6 month) or continued</td>
<td>&gt;0% but &lt;20%</td>
</tr>
<tr>
<td>Suspicious</td>
<td>Tissue diagnosis</td>
<td>4a. low suspicion for malignancy (&gt;2% to ≤50%) 4b. moderate suspicion for malignancy (&gt;10% to ≤50%) 4c. high suspicion for malignancy (&gt;50% to &lt;95%)</td>
</tr>
<tr>
<td>Highly</td>
<td>Tissue diagnosis</td>
<td>&gt;95%</td>
</tr>
<tr>
<td>Known biopsy proven</td>
<td>Surgical excision when clinical appropriate</td>
<td></td>
</tr>
</tbody>
</table>

Keywords: BI_RADS
Molecular classification of Breast Carcinoma, pathological view

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Abstract
In the era of molecular tests, and personalized medicine, changes in classification of breast is necessary and mandatory.
Morphological parameters are not sufficient to explain all aspects of breast cancer.
Gene expression studies and IHC markers introduced us intrinsic biological subtypes of breast cancer.
After the key article of Peru and co-markers, five subgroups were indentiﬁed and Conﬁrmed. IHC markers correlate well with this classiﬁcation.

Luminal subtypes (Luminal A and Luminal B) show high expression of hormone receptors and their genes. Theses subtypes are the most common and constitute 70% of breast cancer.
Prognosis of luminal subtypes are favorable. Luminal B could be HER2 positive, PR negative and Ki-67 index 20% or more. Gene expression signature is low in luminal type A and high in luminal type B.
HER2 subgroup constitute 15-20% of breast cancer cases and show high expression of HER2 by IHC or in situ hybridization techniques. Morphologically this subtype show high grade features and are node positive with poor prognosis. Usually Ki-67 is high.

Basal-like subtype constitute 10-15% of breast cancer cases and is a matter of debate.
Most of these subtype are triple negative (ER negative, PR negative and HER2 negative).
IHC for CK 5/6 and CK14 is used to deﬁne basal phenotype.
Morphologically, basal-type breast cancers are high grade. Special subtypes such as adenoid cystic carcinoma and metastatic carcinoma show basal-like features.

BRCA1 dysfunction (germline or sporadic) is common. Prognosis in this subtype is poor.
This subtype is sensitive to platinum-based chemotherapy and also shows special angiogenic phenotype.
There are subgroups of triple-negative breast cancers: Luminal androgen receptor mesenchymal, basal-like immunosuppression and basal-like immunostimulated subtypes.

Normal breast-like subtype is the ﬁfth subgroup.

Keywords: Molecular Classiﬁcation, Breast Carcinoma

Update on Systemic Therapies for Early Breast Cancer

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Abstract
The decision on systemic adjuvant treatment in breast cancer should be based on stage and approved risk factors and intrinsic type of tumor.
Chemotherapy withanthracyclines and taxanesis usually adminis-
tered for 12-24 weeks (four to eight cycles), depending on the recurrence risk.
Use of dose-dense chemotherapy should be considered, particularly in high risk tumors.
HER2-directed therapy: Neoadjuvant treatment of HER2 positive cancers in addition to chemotherapy, dual anti-HER2 blockade with trastuzumab plus pertuzumab has led to improvements in the pathologic complete response rates (pCR) and event free survival (EFS). (NeoSphere and TRYPHAENA trials)
However the combination of trastuzumab + lapatinib, trials have not approved better survival, therefore this treatment cannot be recommended.
Neoadjuvant trastuzumabemtansine (T-DM1) plus hormone therapy in hormone receptor positive, HER2-positive early breast cancer in comparison with trastuzumab plus endocrine therapy had higher pCR rates.
Some new targeted agents have been used in different trials for treatment of breast cancers.
Neratinib Thyrosin Kinase inhibitor, whichirreversibly inhibits HER2 was studied in the I-SPY 2 trial and demonstrated pCR rates of 32%.
Two trials are studying effect of Palbociclib, a selective inhibitor of CDK4-CDK6 kinases, in combination with Aromatase Inhibitor as neoadjuvant therapy in women with hormone receptor positive cancer.

Triple negative breast cancer (TNBC): Bevacizumab addition to chemotherapy has been studied in the setting of neoadjuvant treatment for TNBC and results in higher pCR. (ARLEmisand GeparSixto trials)
Also some studies on TNBC used various doses and schedules of carboplatin, and in combinations with agents such as bevacizumab and veliparib.

Keywords: Breast Cancer, Systemic Therapies

Breast Cancer in Iran

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Abstract
Breast cancer is the most common type of cancer among women worldwide. Although it seems to be the disease of developed countries, but 50% of all breast cancer and 58% of related death occurs in less developed countries (1). Incidence of breast cancer in developing countries has increased faster in comparison to developed countries during the recent decades (2). Incidence varies all over the world from 19.3 per 100,000 women in Eastern Africa to 89.7 per 100,000 women in Eastern Europe (3). In Iranian women breast cancer is also at the top of malignancies (3) and it is the fifth cause of death in women of Iran (4). Modified radical mastectomy is a common treatment of breast cancer. In Iran, breast cancer affects women at least one decade younger than their counterparts in the western developed countries. (4) A multicenter research study on Iranian female population showed that the mean age of women with breast cancer was 48.8 years. The highest frequency of breast cancer was observed in the 40-49 age groups (31.8%), while 23% of the occurrence of disease was observed in women younger than 40
Colorectal Cancer Screening & Surveillance
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Abstract
Colorectal screening was associated with a reduction of approximately 550,000 cases of colorectal cancer over the past 3 decades in the United State (Cancer 2014). Between 2003 and 2012, more than 4.4 million screening colonoscopies were performed on individuals aged 55-79 years. The important result was prevention of 180,000 CRCs (1 per 28 colonoscopies) and early detection of 40,000 colorectal cancers (1 per 121 colonoscopies) (Clin Gastroenterol Hepatol. 2015)

Tests for screening for colorectal cancer
Stool tests consist of A) Guaiac-based fecal occult blood test B) Fecal immunochemical tests C) Fecal DNA tests
A) Guaiac-based fecal occult blood test (gFOBT) identifies hemoglobin by the presence of a peroxidase reaction and can be reduced CRC mortality (British Journal of Cancer 2012). One major consensus guideline in 2008 recommends that FOB screening should only be performed using the more sensitive guaiac reagent, Hemoccult SENA that have sens:64 to 80% and spec:87 to 90%.
B) Fecal immunochemical tests (FIT or iFOBT) is more specific than guaiac tests and respond only to human globin and have sensitivity 79% and specificity 94%(Ann Intern Med. 2014)
C) Fecal DNA tests has been approved by FDA in 2014, as a screening test for colorectal carcinoma. Overall sensitivities & specificity for colorectal cancer detection by fecal DNA markers ranged from 53% to 87% & 70-100%.(Cancer Epidemiol Biomarkers Prev; 2014)

Radiologic imaging: DBE detects only 50% of adenomas > 1.0 cm and 40% of all polyps and may miss 22 percent of colorectal cancers (NEJM 2000, The American Journal of Gastroenterology 2008)

Rectosigmoidoscopy: There is high quality evidence that both flexible sigmoidoscopy and faecal occult blood testing reduce colorectal cancer mortality when applied as screening tools. A systematic review and meta analysis revealed reduction at mortality of distal colorectal cancer 46-66%(BMJ 2014)

Colonoscopy: The American College of Gastroenterology now considers colonoscopy the “preferred” screening test when it is available (Am J Gastroenterology 2009)

Guidelines for average-risk screening
There is important guide for screening of average risk: Screening beginning at age 50 years, or two to five years prior to the earliest age of CRC diagnosis or in whom genetic testing is uninformative should be offered a flexible sigmoidoscopy or colonoscopy every 12 months starting around age 10 to 12 and continuing until age 35 to 40 if negative and for attenuated FAP, full colonoscopy is recommended

Surveillance after colorectal cancer resection
II studies with 4055 participants were included in a meta-analysis was revealed a significant improvement in overall survival in patients with more intensive follow-up strategies [hazard ratio = 0.75; 95% confidence interval (CI) 0.66-0.86]/(Annals of Oncology 2015)

The most important recommendations for surveillance are: Visit a physician, CEA level, CT of the chest, abdomen, and pelvis and colonoscopy

 Guidelines for patients with a family history of colorectal cancer
American College of Gastroenterology recommendations: If a single first-degree relative at age > 60 with CRC or an advanced adenoma: Colonoscopy every 10 years beginning at age 50
If a single first-degree relative was diagnosed ≤ 60 years with CRC or an advanced adenoma, or two or more first-degree relatives had colorectal cancer or advanced adenomas at any age: Colonoscopy at age 40 or 10 years before the youngest relative’s diagnosis, every five years.

Classic FAP: at-risk family members who have not had genetic testing or in whom genetic testing is uninformative should be offered a flexible sigmoidoscopy or colonoscopy every 12 months starting around age 10 to 12 and continuing until age 35 to 40 if negative and for attenuated FAP, full colonoscopy is recommended

Lynch syndrome: Colonoscopy every one to two years beginning at age 20 to 25 years, or two to five years prior to the earliest age of CRC diagnosis in the family, whichever comes first every one yr

Molecular Pathology in leukemia-Moving to a new era of Practice.

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Abstract
In 2016, the new WHO classification of myeloid neoplasms is scheduled for publication. Several Clinical Advisory Meetings and focused hematopathologist meetings have been held to evaluate new proposals for either entities or diagnostic criteria. In general, most of the new entities and specified diagnostic criteria achieved consensus, but not all. The new WHO proposals were presented at USCAP in Boston (March 2015). It is possible that additional modifications may be made prior to publication of the WHO 2016 blue book. New entities have been added in AML, MDS/MPN, and myeloid neoplasms with eosinophilia categories, while diagnostic criteria have been revised for many individual neoplasms in all of the myeloid neoplasm groups AML, MDS, MDS/MPN, Myeloid neoplasms with eosinophilia and MPN. In addition, many new prognostic markers have been identified; most of these by molecular studies. This course will focus on basic diagnostic strategies for AML, MDS, MDS/MPN and MPN. The goal is to provide the practicing pathologist with a logical ap-
proach to myeloid neoplasms. Information that should be included in consultative reports will also be presented. Despite the impressive molecular genetic “migration” of pathology, the diagnosis of all myeloid neoplasms still begins with CBC data, and morphologic assessment of blood and bone marrow, including assessment of all lineages for dysplasia, and blast enumeration in both blood and bone marrow.

Keywords: Molecular Pathology

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Current Concepts in the Neurosurgical Management of Gliomas

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Abstract

Throughout the last two decades the tenets of management of gliomas, low and high grade alike, have evolved. Based on a large number of prospective and retrospective, well-characterized cohorts, it is now well established that resection matters and that safe maximal resection of tumors should be the aim of surgery. The major surgical difficulty, akin to both low and high grade gliomas, however, is confidently identifying marginal, infiltrating tumor. This difficulty has now been overcome by the availability of a combination of neuronavigation, intraoperative ultrasound, fluorescence-guidance using 5-ALA and intra-operative MRI, the latter no longer being indispensable due to the availability of the other methods. On the other hand, undesirable neurological sequelae of uncritically extended resections can be avoided by using methods of intra-operative mapping and monitoring, including local anesthesia for mapping and monitoring of cortex and tracts responsible for language. Last and not least, the surgical management of gliomas is only a part of treatment. Neurooncological surgery should be embedded in an interdisciplinary system of neurooncological care for obtaining the best treatment results.

This talk will review the current methodology employed in the neurosurgical management of gliomas and there impact on outcome in these tumors.

Keywords: Gliomas, Neurosurgical Management

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Malignant, Semimalignantand Benign Intrinsic and Extrinsic Tumors in Peripheral Nerves

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Abstract

Tumors of the peripheral nerves do not behave like other soft tissue neoplasms because of their structure and origin. The structure of the peripheral defines the microsurgical treatment. Most of the tumors are benign what implies they can be removed by microsurgery with excellent outcome. This is in contrast to the malignant nerve tumors. The treatment of malignant nerve tumors is close to sarcoma surgery.

A benign schwannoma arises from one single fascicle. Thus the microsurgical opening of the neurolemmoma of the nerve offers the total removal of the benign tumor by resection of the tumor-carrying fascicle.

A transit zone between benign and malign nerve tumors is met in neurofibromatoses. Neurofibromas and plexiform neurofibromas larger nerves present with a higher risk of malignancy compared with smaller neurofibromas from smaller nerves. Malignant peripheral nerve sheath tumors (MPNST) pose a challenge. The 5 years survival is poor (40-60%). Serial biopsies in different areas of the malignoma are mandatory because the MPNSTs present differentiated tissue probes (WHO-grade 1) next to highly-differentiated malignant tissue areas (WHO-grade 2-4). It may happen that at first a large tumor mass is suspicious to be a malignant schwannoma, but in the further course of dissection the fascicular structure of the nerve is preserved. In this case a complete resection should be omitted.

En-bloc resections of the malignant tissue should be done with a safety margin of 5 centimeter from the tumor margin up and down to the healthy nerve. Ten centimeter defect has to be bridged.

Keywords: Malignant, Peripheral Nerves, Tumor

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The 2016 Classification of Tumors of the Central Nervous System

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Abstract

The 2016 WHO Classification of Tumors of the Central Nervous System includes conceptual and practical changes as compared to the 2007 classification. For the first time molecular genetics is part of the diagnosis, such as in “diffuse astrocytoma, IDH-mutant” and “oligodendroglioma, IDH-mutant and 1p/19-codeleted”. Other tumor types are classified based on molecular profile, such as medulloblastoma. New entities requiring genetic data have been introduced, such as “Ependymoma, RELA-fusion positive”, “Diffuse midline glioma, H3K27-mutant” and “Embryonal tumor with multilayered rosettes, C19MC-altered”. The 2016 edition includes new histologically defined neoplasms, such as diffuse leptomeningeal glioneuronal tumor, while a few tumor types have been deleted because they are no longer recognized or accepted. Brain invasion of meningioma now qualifies as a criterion of atypia, while solitary fibrous tumor and hemangiopericytoma have been unified and subsumed on a grade 1 to 3 scale. The list of mesenchymal, lymphoid and histiocytic tumors has been expanded to cover the most commonly encountered neoplasms in the nervous system. Major changes and practical challenges that are relevant for oncologists and pathologists will be summarized.

Keywords: Neurology, Nervous System, Tumor
Robotic radiosurgery with the CyberKnife Offering New Treatment Options in Oncology

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Abstract

Background: The concept of radiosurgery was developed in 1951 by Lars Leksell (1907-1986). After introduction of the Gamma Knife in 1968, also linear accelerators had been modified to apply high precision radiation, employing the stereotactic principle in the late 80’s. Systems required a stereotactic frame as a reference system, screwed to the cranial bone. Robotic radiosurgery was introduced in 1994: a compact linear accelerator mounted onto a sixaxis industrial robot arm. This flexible irradiation unit was combined with a stereotactic x-ray imaging unit as well as a robotic treatment table, offering frameless image guidance: The CyberKnife® allows online control and correction of the patient position as well as the tumor throughout the treatment procedure. Objectives: To demonstrate the possibilities and limitations of robotic radiosurgery, transferring the treatment principle of radiosurgery from intracranial to spinal and further extracranial indications.

Materials/ Patients and Methods: 750 CyberKnife treatments over a 4-year period are analyzed to demonstrate indications, outcomes and limitations. Treatment parameters as well as follow-up data are evaluated. Established indications as well as complex individual cases are presented and new fields of extracranial stereotactic radiosurgery are defined.

Results: The treatment dose can be delivered in one treatment session or in three to five fractions. The treatment of brain metastases, meningiomas, acoustic neuromas, schwannomas or recurrent pituitary tumors is well established. Also non-tumor treatments are conducted for arterio-venous malformations or trigeminal neuralgia.

The ablative stereotactic irradiation of small lung tumors (T1 and T2), lung metastases, liver metastases and low-grade prostate carcinomas has become a standard procedure. Additionally, bone metastases can be tackled with single session radiosurgery. Oncological patients are assessed in an interdisciplinary tumor board to evaluate local tumor treatment in case of systemic disease. A variety of lesions might be technically treatable with the CyberKnife, but thorough selection of suitable patients is crucial to guarantee a benefit from localized treatment. Oligometastatic disease and prolonged survival, thanks to better medical treatments, needs for individually tailored treatment concepts. A reduction of long term side effects has to be achieved.

Conclusion: Robotic radiosurgery is a minimally invasive treatment option for localized, small primary and secondary tumors. It offers new options especially in oligometastatic disease.

Keywords: Robotic Radiosurgery, Oncology

Local Control after Fractionated Stereotactic Radiation Therapy for Brain Metastases

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Abstract

Background and Purpose: Stereotactic radiosurgery (SRS) is frequently used in the management of brain metastases, but concerns over potential toxicity limit applications for larger lesions or those in eloquent areas. Fractionated stereotactic radiation therapy (SRT) is often substituted for SRS in these cases. We retrospectively analyzed the efficacy and toxicity outcomes of patients who received SRT at our institution.

Materials and Methods: Seventy patients with brain metastases treated with SRT from 2006-2012 were analyzed. The rates of local and distant intracranial progression, overall survival, acute toxicity, and radionecrosis were determined.

Results: The SRT regimen was 25 Gy in 5 fractions among 87% of patients. Median overall survival was 10.7 months. Median time to local progression was 17 months, with a local control rate of 56% at one year. Acute toxicity was seen in 11 patients (16%), mostly grade 1 or 2 with the most common symptom being mild headache. Symptomatic radiation-induced treatment change was seen on follow-up MRIs in 3 patients (4.3%).

Conclusions: SRT appears to be a safe and reasonably effective technique to treat patients with brain metastases who would otherwise be ineligible to receive SRS, though dose intensification strategies may further improve local control.

Keywords: Brain Metastases, Fractionated Stereotactic Radiation Therapy

Hematopoietic StemCell Transplantation for treatment of malignancies

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Abstract

Hematopoietic stem cell transplantation (HSCT) is an estab-
Abstract

The rapidly expanding field of molecular genetics and the application of state of the art technology in the management of hematological malignancies have had a pivotal role in the improvement in the treatment and outcome of these disorders. Currently, genetics plays a pivotal role in the prognostication and diagnosis of the most hematologic neoplasms. The utilization of genetic tests has improved the specific treatment of various hematologic malignancies as well as the significant advances in the evaluation of treatment responses. Therefore, it is imperative for practitioners working in the field of hemat-oncology to have appropriate understanding of the fundamental concepts of genetics in order to understand upcoming molecular research in this area to enhance the translational medical care.

Keywords: Cancer, Hematological Malignancy, Genetics

Up Date on Predictive Molecular Pathology and Its Role in Targeted Cancer Therapy

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Abstract

Antibody mediated blockade of the epidermal growth factor receptor (EGFR) is a therapeutic option in the treatment of advanced colorectal cancer. Those only patients with cancers bearing no mutation in the KRAS gene benefit from EGFR-targeting antibodies like cetuximab and panitumumab.

In 2008, exclusion of KRAS hot spot mutations in exon 2 have become mandatory for the application of EGFR-targeting antibodies in the first-line therapy of advanced colon cancer. The list of genetic alterations to be excluded for EGFR antibody therapy has been extended to KRAS exons 3, 4 and NRAS exons 2-4 in 2013. Other genetic changes like BRAF and PI3K mutations have also been described to associate with lacking EGFR antibody response but the data generated in a different studies is too controversial to include these markers in routine predictive molecular testing and therapy decision making to date. Another application of molecular pathology in CRC refers to microsatellite instability. MSI-H is a hallmark alteration of HNPCC/Lynch syndrome-associated tumors, but is also found in colorectal, ovarian, pancreatic, and renal cancer treated with allogeneic transplantation.

Keywords: Hematopoietic Stem Cell Transplantation, malignancies

Clinically Approved Applications of Molecular genetic Testing in Hematologic Malignancies

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1CEO of Hope Generation Genetic Polyclinic.

Abstract

Clinical applications of molecular genetic testing have revolutionized the diagnosis and treatment of hematologic malignancies. While some solid tumors are very chemo-radiosensitive (e.g., Ewing’s sarcoma and gonadal tumors), as a whole they are not curable by chemotherapy. The use of hematopoietic stem cell transplant (HSCT) can be effective for the treatment of selected solid tumors. This approach arose from studies that allogeneic HSCT has been successfully employed for patients with leukemia, aplastic anemia and hemoglobinopathies. Intensive chemotherapy supported by hematopoietic stem cell transplantation (HSCT) has been considered a useful approach for patients with chemoresistant malignancies for many years. An allogeneic GVT effect is observed in a proportion of patients with breast, colorectal, ovarian, pancreatic, and renal cancer treated with allogeneic transplantation.

Keywords: Hematopoietic Stem Cell Transplantation, malignancies

The Role of MRD in Multiple Myeloma

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Abstract

Adult T cell lymphoma/leukemia (ATLL) is an aggressive malignant disease of CD4+ T cells associated with the human T-cell lymphotropic virus type I (HTLV-I). Prognosis of ATLL patients is correlated to the subtype of ATLL and prognostic factors such as lactate dehydrogenase (LDH), hypercalcemia, age, number of involved lesions and molecular factors. Patients with aggressive ATL (acute and lymphoma subtypes) generally have a very poor prognosis because of intrinsic chemoresistance of malignant cells, a large tumor burden with multiorgan failure, hypercalcemia, and/or frequent infectious complications due to a profound T-cell immune deficiency. Patients with indolent ATL (ie, the chronic or smoldering subtypes) have a better prognosis.

For asymptomatic patients a watchful-waiting policy is suggested. For symptomatic patients who have skin lesions or opportunistic infection zidovudine (AZT)/interferon α (IFN-α) is recommended. Treatment of skin lesions are performed with topical corticosteroidointments and systemic corticosteroid is recommended for patients with refractory skin lesions.

Conventional chemotherapy or AZT/IFN is considered as the first line treatment for patients with good prognostic factors. Patients with lymphoma show lower and slower response to AZT/IFN and therefore these patients are good candidates for conventional chemotherapy. Here we overview the new approach for treatment of ATL.

Keywords: ATLL-Lymphoma- Leukemia- Adult T cell

Adult T cell Lymphoma/Leukemia (ATLL)

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Abstract

Adult T cell leukemia/lymphoma (ATL) is an aggressive malignant disease of CD4+ T cells associated with the human T-cell lymphotropic virus type I (HTLV-I). Prognosis of ATL patients is correlated to the subtype of ATLL and prognostic factors such as lactate dehydrogenase (LDH), hypercalcemia, age, number of involved lesions and molecular factors. Patients with aggressive ATL (acute and lymphoma subtypes) generally have a very poor prognosis because of intrinsic chemoresistance of malignant cells, a large tumor burden with multiorgan failure, hypercalcemia, and/or frequent infectious complications due to a profound T-cell immune deficiency. Patients with indolent ATL (ie, the chronic or smoldering subtypes) have a better prognosis.

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Keywords: ATLL- Lymphoma- Leukemia- Adult T cell

Clinically Approved Applications of Molecular genetic Testing in Hematologic Malignancies

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Abstract

The rapidly expanding field of molecular genetics and the application of state of the art technology in the management of hematological malignancies have had a pivotal role in the improvement in the treatment and outcome of these disorders. Currently, genetics plays a pivotal role in the prognostication and diagnosis of the most hematologic neoplasms. The utilization of genetic tests has improved the specific treatment of various hematologic malignancies as well as the significant advances in the evaluation of treatment responses. Therefore, it is imperative for practitioners working in the field of hemat-oncology to have appropriate understanding of the fundamental concepts of genetics in order to understand upcoming molecular research in this area to enhance the translational medical care.

Keywords: Cancer, Hematological Malignancy, Genetics
Abstract

Assessment of disease state and minimal residual disease (MRD) is becoming standard diagnostic care for potentially curable neoplasms such as acute lymphoblastic leukemia. In multiple myeloma (MM), the majority of patients will inevitably relapse despite achievement of progressively higher complete remission (CR) rates. The development of new and effective therapies usually comes along with the need for more sensitive approaches to compare the efficacy of different treatment strategies in MM. Recent trials with novel agent combinations alone have also resulted in high CR rates, even among patients older than 65, high-risk patients, and relapse/refractory-MM. The experience of several cooperative groups using different MRD techniques indicates that persistence of MRD is always an adverse prognostic feature, even among CR patients. It would be safer to make clinical decisions based on MRD positivity rather than on MRD negativity because the patchy pattern of BM infiltration typically observed in MM leads to a degree of uncertainty regarding MRD-negative results. Some of these limitations could be potentially overcome in flow- and/or molecular-MRD negative cases by parallel usage of sensitive imaging techniques, although these approaches may also give false-negative results. Thus, it may be envisioned that if treatment decisions are made according to patients’ MRD status, follow-up MRD studies would also become useful to detect MRD reappearance preceding clinical relapse. MRD could potentially be used as a biomarker to evaluate the efficacy of treatment at different stages (induction, transplantation, consolidation, and/or maintenance;) and as a surrogate for OS. In turn, extensive research is still warranted to determine how to best integrate medullary and extramedullary MRD monitoring.

Keywords: MRD, Multiple Myeloma

New Methods for Detection of Human Papillomavirus

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Abstract

Human Papillomavirus (HPV) is the most commonly sexually transmitted virus. There are around 100 types of HPV with different oncogenic potential. Worldwide, the most common high-risk (HR)-HPV are 16 and 18, responsible for approximately 70% of cervical cancers (CC). The challenge of CC screening is to detect those lesions with high risk of progression. The presence of HPV can be inferred from morphological, serological and clinical findings (Pap smear and Colposcopy and acetic acid test). Molecular techniques are most commonly used for HPV testing (gold standard) which classified to 3 major categories: a- nucleic acid-hybridization assays such as Southern blotting, in situ hybridization and dot-blot hybridization b- signal-amplification assays such as Digene® HPV test using Hybrid Capture (hc2) technology, and the Cervista HPV HR assay which distinguishes between HR and LR groups, but was not designed for genotyping single HPV , c- nucleic-acid amplification such as Polymerase chain reaction (PCR). The PCR-based techniques are highly sensitive, specific, and widely used. Real-time PCR is a reliable, sensitive, and specific diagnostic tool for detection and genotyping of targeted HPV genotypes in tissue specimens. The Abbott Real-Time HR-HPV test is a novel assay based on concurrent individual genotyping for HPV-16/18 and pooled detection of 12 HR-HPV genotypes. In April 2011, the FDA approved the cobas HPV Test (automated sample preparation combined with Real-Time PCR) to detect 14 HR-HPV, HPV-mRNA detection or oncogenic E6/E7 genes (responsible for cell transformation) can be performed by two commercial assays, The Pretect HPV-Proofer assay (5 HR-HPV) and APTIMA® HPV assay (FDA Approved In october 2011) which provides better sensitivity (14 HR-HPV). Staining methods for L1 Capsid protein and p16INK4a displaying the transforming phase of the HPV infection. Cobas, Apta and hc2 tests show good agreement and excellent sensitivity.

Keywords: Human Papillomavirus, Detection Methods, Biomarkers, Cervical Cancer

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Chronic lymphocytic leukemia (Diagnosis&treatment)

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Abstract

Chronic lymphocytic leukemia most commonly affects older adults. Many people with chronic lymphocytic leukemia have no early symptoms. Those who do develop signs and symptoms may experience: Enlarged, but painless, lymph nodes, Fatigue,Fever,Pain in the upper left portion of the abdomen, which may be caused by an enlarged spleen, Night sweats, Weight loss, Frequent infections. Factors that may increase the risk of chronic lymphocytic leukemia include: Age, Race, History of blood and bone marrow cancers, Exposure to chemical carcinogens. Chronic lymphocytic leukemia may cause complications such as: Frequent infections, A switch to a more aggressive form of cancer. Increased risk of other cancers. Immune system problems: Diagnosis: Count the number of cells in a blood sample, Determine the type of lymphocytes involved, Flowcytometry may also help analyze the leukemia cells for characteristics that help predict how aggressive the cells are. Analyze lymphocytes for genetic abnormalities. Imaging tests, such as computerized tomography (CT). Staging: Two different staging systems are used. Each assigns a stage early, intermediate or advanced. These levels are used to determine treatment options. In general, people with early-stage disease don’t require immediate treatment. Those with intermediate-stage disease and advanced-stage disease may be given the option to begin treatment right away. Treatment may not be necessary in early stages. Treatments for intermediate and advanced stages: Chemotherapy. Targeted drug therapy. Bone marrow stem cell transplant. Supportive care, Cancer screening, Vaccinations to prevent infections. Monitoring for other health problems. Palliative care. No alternative treatments have been proved to cure chronic lymphocytic leukemia.

Keywords: Chronic Lymphocytic Leukemia

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Management of LSIL and HSIL in Adolescent

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Abstract

In screening guideline, screening of adolescent is not advised. cervical cancer risk remains low for women under 25 years because hpv infection is common (in unvaccinated females) and lesions often regress. The rates of cervical cancer in 21-24 year age group are low so in this group with LSIL in cytology repeat cytology at 12 month is preferred and if => HSIL, colposcopy is done. for women age 25-29 years with LSIL cytology, colposcopy should be performed. In management of adolescent women with HSIL, colposcopic examination is done, if colposcopic examination is satisfactory and endocervical sampling is negative, immediate loop electrosurgical excision is unacceptable. If no CIN2,3 then observation with colposcopy and cytology 6 month interval for up to 2 years done and if HSIL persists for 24 month with no CIN 2,3 identified then diagnostic excisional procedure be done. if in observation arm HSIL persist for 1 year biopsy done and no CIN2,3 continues observation. If two consecutive negative pap and no high grade colposcopic abnormality, routine screening done. When histologic diagnosis of CIN 2,3 in adolescent reported either observation or treatment is acceptable. When CIN3 is specified or colposcopy is unsatisfactory, treatment is preferred.

Keywords: Management, LSIL, HSIL.

AGUS Management

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Abstract

AGC on cervical cytology usually originate from the glandular epithelium of the endocervix or endometrium. AGC require further evaluation for premalignant condition of the cervix, uterus and rarely, ovary. The terminology used to classify atypical glandular cells is: Atypical glandular cells (AGC): endocervical, endometrial or NOS is noted as subcategory. Atypical glandular cells, favor neoplastic: that show feature suggestive of, but not sufficient for, an interpretation of adenocarcinoma. Endocervical adenocarcinoma in situ (AIS): Adenocarcinoma: Glandular abnormalities are found in approximately 0.1 to 2.1 percent of cervical cytology samples. most commonly in women age 40 or older. Lower sensitivity of cervical cytology for detecting endocervical glandular dysplasia. This lower sensitivity has been attributed to several factors:

it can be difficult for the cytopathologist to distinguish between high grade squamous cells and glandular cells; endometrial cells, reactive endocervical cells, tubal metaplasia, and cervical endometriosis may mimic adenocarcinoma in situ; and lesions may not be seen or sampled because they are small or high in the endocervical canal.

Modifying factors — Several patient characteristics and cytologic findings are predictive of the likely type and severity of abnormality associated with AGC. AGC subcategory: high grade CIN, AIS or invasive Cx or endometrial cancer was found more often in women with AGC-favor neoplasia compared with other with AGC(S65 vs S5).

Coexisting Squamous cytoplogic abnormality: 50% women with AGC have coexisting squamous abnormality, and appear to be more have a squamous rather than glandular lesion.

Human papillomavirus infection: positive HPV are high risk for Cx cancer in AGC is associated with a histologic Dx of CIN, particularly with AGC-NOS. HPV is not a reliable method of triage F/U AGC cytology, however it is useful in the further evaluation.

Age: the risk of malignancy increases with age.

(Highest in 50y or older/ the most common lesion in younger than 40y was squamous and CIN)

Keywords: AGUS Management

Role of Cancer Stem Cells in Gynecological Malignancies

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Abstract

Despite recent progresses in cancer biology and therapy, endometrial and ovarian cancers are the most common types of gynecological malignancies affecting women in the western countries. The main challenges in treatment of such cancers are chemo resistance and tumor relapse. Among the latest concepts in cancer biology, cancer stem cells (CSCs) and microenvironment are involved in tumor progression and metastasis. These sub population of the cells have self renewal ability to regenerate a heterogeneous tumor. They are characterized by specific surface markers and resistance to chemo radio therapeutic treatments. Therefore, identification of novel specific markers for the CSCs, simplifies the isolation and characterization of such cells from the solid tumors. This knowledge paves the way for the development of new targeted therapies against the CSCs. Such treatments will be particularly efficient for early-stage and premenopausal patients where the uterus may be conserved, and for late-stage cases where the current treatments target the bulk tumor cells rather than CSCs. Moreover, the tumor bulk contains different compartments such as cellular component, cytokine network, and extracellular matrix. These compartments have interactions to form a CSC niche. Indeed, understanding the molecular mechanisms supporting this crosstalk and interactions also let us to design new therapeutic regimens with more specificity and efficiency in targeting the gynecological CSC’s niches in comparison with the regular therapeutic treatments.

Keywords: Cancer Stem Cells, Gynecological, Targeted Therapy, Markers
The Role of MRI in Assessing Gynaecological Malignancies

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Abstract

Magnetic resonance imaging (MRI) is an imaging modality that has been developed and used since the mid-1970s. MRI has several advantages over computed tomography (CT) and ultrasonography. One important feature is its noninvasiveness. A second feature that makes MRI particularly attractive is its capability for multiplanar imaging. Without repositioning the patient, transverse, sagittal, coronal, and nonorthogonal views may be obtained in a short time. Such capabilities allow excellent study of normal and abnormal anatomy. Compared with MRI, ultrasonographic examination allows more tissue planes to be observed in real time. However, the window of view is actually relatively small, and a simultaneous display of a large portion of the body is not possible. A third advantage of MRI is its excellent tissue differentiating capabilities, made possible because the biochemical characteristics of the nuclei within their microscopic environment alter the information received during an MRI acquisition. MRI acquisitions may further alter and differ contrast. These signals are not influenced by the amount of bladder filling, the size of a patient, or the amount of gas in the surrounding bowel, but these factors have an important role in the quality of an ultrasonographic image. With MRI, excellent tissue differentiation is possible without the use of contrast agents. However, contrast agents may further augment tissue contrast and are much safer than the iodinated equivalents used in CT. A fourth advantage of MRI is its intrinsic sensitivity to flowing blood. As with Doppler ultrasonography, flow direction and speed may be determined. Both arterial and venous abnormalities can be assessed by MRI.

Gynecological malignancies pose a very challenging problem to the Radiologist and the Oncologist. Meticulous pretreatment patient evaluation is of critical importance for precise tumor staging and patient selection for appropriate treatment. Nowadays MRI has an important role in endometrial, cervical and ovarian cancer. In endometrial cancer, MRI is used to identify myometrial invasion and extratumoral disease, allowing preoperative surgical planning in women with serious comorbidity. In cervical cancer, MRI has an established role in local staging. By assessing the proximal extension of tumors in young women, MRI determines the feasibility of fertility-preserving surgery. It is also used to plan and administer radiotherapy. This optimizes tumor radiation, while limiting unwanted radiation to the bowel and other pelvic organs.

In ovarian cancer, MRI is useful in young women as it is superior to ultrasound in diagnosing endometriomas, dermoids and fibroids, which can be misdiagnosed by ultrasound as malignant lesions.

Keywords: MRI, Gynaecological Malignancies

Cervical Cancer Screening and HPV vaccines

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Abstract

Cervical cancer is the third most common female cancer worldwide, with an estimated incidence of 530,000 and 270,000 related deaths in 2012; the attributable fraction due to HPV infection was estimated to be 100 percent. HPV types 16 and 18 cause approximately 70 percent of cervical cancers and 50 percent of precancerous cervical lesions (ie, cervical intraepithelial neoplasia grade 2 and grade 3 [CIN2/3]). HPV types 31, 33, 45, 52, and 58 are estimated to cause an additional 19 percent of invasive cervical cancers.

Cervical cancer screening with cervical cytology (ie, Papanicolaou test) has reduced the incidence and mortality of cervical cancer by more than 70 percent over the past six decades. Screening for cervical cancer by cervical cytology and/or HPV testing is recommended for all females beginning at age 21. A preventive healthcare visit is an opportune time to discuss and offer HPV vaccination and/or cervical screening depending on the age of the woman.

Cervical cancer screening is recommended for any woman 21 years of age or older. Clinicians should be aware that HPV immunization is not effective in clearing cytologically evident disease or HPV infection that is already present.

In 2011, the American Cancer Society, the American Society for Colposcopy and Cervical Pathology, and the American Society for Clinical Pathology updated screening guidelines for the early detection of cervical cancer and its precursors. Recommended screening strategies were cytology and cotesting (cytology in combination with hrHPV testing). These guidelines also addressed the use of hrHPV testing alone as a primary screening approach, which was not recommended for use at that time. There is now a growing body of evidence for screening with primary hrHPV testing. Thirteen experts including representatives from the Society of Gynecologic Oncology, American Society for Colposcopy and Cervical Pathology, American College of Obstetricians and Gynecologists, American Cancer Society, American Society of Cytopathology, College of American Pathologists, and the American Society for Clinical Pathology, convened to provide interim guidance for primary hrHPV screening.

This guidance panel was specifically triggered by an application to the FDA for a currently marketed HPV test to be labeled for the ad-
**The Role of Neoadjuvant Chemotherapy in Cervical Cancer**

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**Abstract**

Cervical cancer is the third most common malignancy in women worldwide, and it remains a leading cause of cancer-related death for women in developing countries. Radical hysterectomy is recommended for patients with limited early stage (FIGO IIA2, IIB and IIA1) cervical cancer. In contrast, concurrent chemoradiation is recommended as an effective treatment for patients FIGO stage IB2, IIA2, and IIB. In recent years, the use of neoadjuvant chemotherapy (NACT) has received increasing attention and has been used as an effective treatment in patients with cervical cancer especially in bulky tumors. The presumed benefit of NACT are early initiation of systemic treatment results in elimination of micrometastasis, reducing the incidence of pathological risk factors and the frequency of adjuvant treatment after radical hysterectomy as well as preservation of psychosexual dysfunction and improvement of patients quality of life. However, there remains the possibility of delaying the main curative treatment via radical surgery, radiotherapy, or chemoradiotherapy. There also remains the possibility of developing radioresistant cell clones. NAC followed by surgery is thought to be superior to radiotherapy alone; however at present, there is no compelling evidence to definitively state that NAC followed by surgery is superior to primary radical surgery alone or primary cisplatin-based chemoradiation alone. Large, randomized and well-designed studies are needed to answer this question.

**Keywords:** Cervical Cancer, Neoadjuvant Chemotherapy, Radiotherapy

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**Epidemiology of Ovarian Cancer in Khorasan Razavi**

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**Abstract**

Ovarian cancer is most common cause of gynecologic cancer death in the world. This neoplasm is the second most common gynecologic malignancy in developed countries, with an incidence of 9.4 per 100,000 women and a mortality rate of 5.1 per
ABSTRACTS

100,000 women. There is no recent data about incidence and prevalence of ovarian cancers in Khorasan Razavi Province in North East of Iran. The aim of this study was to find the prevalence and pattern of ovarian cancers in Iran and Khorasan Razavi Province.

Materials and Methods: A prospective study was conducted in literature review and all Health center in Mashhad. Based upon data was collected by review of all file of center from 2012 to 2017. Prevalence of all forms ovarian cancers was 6.4 per 100,000 women. The average age of patients was 44 years. The most common type of cancer was epithelial ovarian cancer and subtype serous adenocarcinoma was most usual subtype of pathology reports (45.63%). The majority of patients were in stage III (36.90%). The overall mortality of patients in this study was 10.32%.

Conclusion: Setting and developing plans cancer registry data is necessary for cancer control programs which could be trend monitored and prevent increasing of this cancer in the future with more emphasis on decrease risk factors.

Keywords: Ovarian Cancer, Prevalence, Khorasan Razavi, Incidence

Management of Advanced Ovarian Cancer

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Abstract

Approximately 75 percent of women have stage III (disease that has spread throughout the peritoneal cavity or that involves lymph nodes) or stage IV (disease spread to more distant sites) disease at diagnosis. A standard approach for these patients is maximal surgical cytoreduction followed by platinum and taxane-based chemotherapy. The theoretical benefits of debulking surgery include removal of large, necrotic tumors with poor blood supply that might lead to impaired chemotherapy delivery. Two modalities used in the postoperative treatment of newly diagnosed advanced stage EOC are intravenous (IV) chemotherapy alone or a combination of IV and intraperitoneal (IP/IV) chemotherapy.

Keywords: Advanced Ovarian Cancer

Evaluation of the Endometrium for Malignant or Premalignant Disease

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Abstract

INTRODUCTION: Evaluation of the endometrium is the key component in the diagnostic evaluation of women suspected of endometrial cancer or a premalignant endometrial lesion. An endometrial sampling procedure is the gold standard for diagnostic evaluation of women with abnormal uterine bleeding in whom endometrial hyperplasia or carcinoma is a possibility.

Invasive methods: Endometrial biopsy - Dilation and curettage - Hysteroscopy

Noninvasive methods: Transvaginal ultrasound- CT-SCAN

Gynecologic Challenges

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Abstract

INTRODUCTION: Most challenging cases in gynecology pathology that must be discussed between pathologist and gynecologist.

Material and method: These challenges in Ovarian Frozen Section, mismatch of Cytology and Histology in cervical pathology, New endometrial Terminology and Stump in Myometrial Lesion.

Conclusion: Team working is a rule for reduction of Gynecology oncology failures.

Keywords: Challenges, Pathologist, Gynecologist
**ABSTRACTS**

**Women who should undergo evaluation for endometrial hyperplasia or endometrial cancer**

**Abnormal uterine bleeding:** Postmenopausal women - Any uterine bleeding, regardless of volume (including spotting or staining) and/or further evaluation of a sonographic finding of abnormal appearing endometrium.

- Age 45 years to menopause - Any abnormal uterine bleeding, including intermenstrual bleeding in women who are ovulatory.

Abnormal uterine bleeding in any woman that is frequent (interval between the onset of bleeding episodes is less than 21 days), heavy (total volume of >80 mL), or prolonged (longer than seven days).

Younger than 45 years - Abnormal uterine bleeding that is persistent, occurs in the setting of a history of unopposed estrogen exposure (obesity, chronic anovulation) or failed medical management of the bleeding, or in women at high risk of endometrial cancer (e.g., tamoxifen therapy, Lynch syndrome, Cowden syndrome).

In addition, endometrial neoplasia should be suspected in premenopausal women who are anovulatory and have prolonged periods of amenorrhea (six or more months).

**Cervical cytology results:** Presence of atypical glandular cells (AGC)-endometrial.

Presence of AGC-all subcategories other than endometrial - If ≥35 years old OR at risk for endometrial cancer (risk factors or symptoms).

Presence of benign-appearing endometrial cells in women ≥40 years of age who also have abnormal uterine bleeding or risk factors for endometrial cancer.

**Other indications:** Monitoring of women with endometrial pathology (e.g., endometrial hyperplasia).

- Screening in women at high risk of endometrial cancer (e.g., Lynch syndrome).

*Keywords:* Endometrium, Malignant, Premalignant

**Surgical Treatment in Uterine Sarcoma**

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**Abstract**

Uterine sarcoma contains 3-5% of the uterus malignancies that usually occurs after menopausal age and is divided into three types. The most common form of uterine leiomyosarcoma, low-grade endometrial stroma sarcoma, and so it is malignant mixed Mullerian tumor (MMMT).

Given the pace of metastasis in tumor leiomyosarcoma and MMMT And especially the conflicts distant organs such as the lungs, liver and brain, after surgery, adjuvant chemotherapy is necessary for future implantation in a rented uterus.

If there is no response to treatment in the next curettage and on condition no increase in the disease stage, can be given a short respite 2-3 months to the patient’s with increasing doses of previous drugs from 40 to 160 mg daily, GnRh agonist every 28 days, contraceptive pills, IUD levonorgestrel as the conservative treatment for infertility group for treatment with drugs of letrozole category from 40 to 160 mg daily, GnRh agonist every 28 days, contraceptive pills, IUD levonorgestrel as the conservative treatment for infertility group for treatment with drugs of letrozole category without estrogen.

If there is no response to treatment in the next curettage and on condition no increase in the disease stage, can be given a short respite 2-3 months to the patient’s with increasing doses of previous drugs and if no response or increased tumor stage should be considered the definitive treatment or hysterectomy. Although, ovarian tissue can be moved for freezing in the Infertility Center. If the ovarian sample is negative in frozen section and or better use of the patient ovum and wife sperm and embryos frozen for future implantation in a rented uterus.

Notably, after the end of pregnancy should be decided about hysterectomy and definitive treatment.

*Keywords:* Endometrial Cancer, Young Women Under 40 Years of Age, Treatment, Hysterectomy, Removal of the Ovaries, Uterus and Ovaries are Preserved, Frozen Ovarian, Hormonal Therapy
5-Aminolevulinic Acid-Protoporphyrin Fluorescence-Guided Surgery of Glioblastoma: Live Surgery

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Abstract
Glioblastoma is the most common and lethal tumor of the brain. Treatment of glioblastoma remains very poor with 5-year survival rates of 5% and survival has not improved during the last decades. A technique uses 5-aminolevulinic acid (5-ALA), a natural intermediate compound in the heme-porphyrin biosynthesis pathway, enhances complete resections of tumors which is associated by prolonged progression free-survival, fewer re-operation, and delayed clinical deterioration. Here, we will present a live surgery of glioblastoma resection using 5-ALA technique in a patients suffering from brain tumor.

Keywords: Glioblastoma, Surgery

The Effect of Garlic Consumption on Cancer Prevention: a Systematic Review

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Abstract
Background and Objective: Nowadays cancers are the most common and deadly diseases. Treatment of cancer is costly and fairly inefficient. So simplest solution is prevent the appearance of risk factors of cancer. We know that, exercise, lack stress, low calorie and high fiber diet such as vegetables and fruits prevent the cancer. Old people have mentioned for garlic (Allium sativum) many health benefits. Many studies have supported the Effective role of garlic in cancer prevention such as Breast, colorectal, gastric, thyroid, and ... cancer. So we have reviewed the effect of natural garlic and selenium-enriched garlic (Se-garlic) for cancer prevention.

Methods: In this study, data were collected from electronic databases (Google Scholar and PubMed sites; until March 2016). We have reviewed 27 relevant articles systematically. So we have evaluated the effect of garlic consumption on cancer prevention.

Results: There are several chemomechanisms to explain cancer prevention of garlic. These mechanisms include regulating in activity of several enzymes, free radicals scavenging, antioxidative, detoxify carcinogens, immune responses and apoptosis. Recent data have noted garlic can modulate cell-signaling pathways for controlling the unwanted proliferation of cells. So Garlic is known as a strong cancer chemopreventive and even therapeutic medicine. Some studies have attributed anti-cancer properties of garlic to some organosulfur compounds (OSCs). While OSCs exert is dependent on type of body organs. Other studies have shown that the better efficacy of cancer prevention by Se-garlic Compared with natural garlic. Se-garlic inhibit tumorigenesis via Se-methylselenocysteine. So this vegetable prevent the cancer by suppressing and reducing number of the early transformed cells. The evidence suggests that garlic have cancer chemopreventive effects and all of people should use it regulatorily.

Conclusions: Garlic have cancer chemopreventive effects whit different mechanisms such as OSCs and selenium. The ability of protect against tumorigenesis in Se-garlic is dependent on dosage of selenium in garlic. So we suggest future research focus on selenium in the garlic.

Keywords: Garlic, Cancer Prevention, Selenium, Allium Sativum, Organosulfur Compounds (OSCs)
POSTER PRESENTATIONS
**Study of Interaction Between Histon H1 and Ofloxacin in Presence of DNA by Multi Spectroscopic and Molecular Modeling Techniques**

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**Abstract**

Ofloxacin is a synthetic antibiotic of the fluoroquinolone drug class considered to be a second-generation fluoroquinolone. In this study, ofloxacin stops the replication of DNA with replacement between twin fibers. Proteins exist in core of cell and DNA turn around this proteins. Histons with positive electricity connect with phosphate witch have negative electricity. Tit study show the Interaction between ofloxacin and complex of Histon-DNA with spectroscopic techniques, viz., UV visible, fluore-cence (intrinsic and synchronous), resonance Rayleigh scattering and circular dichroism. UV absorption, spectra show a hyperchromic shift on the addition of ofloxacin indicating the complex formation between the two. The interaction between ofloxacin and Histon-DNA was taken place via static quenching with 1:1 binding ratio as revealed by the analysis of fluorescence measurements. Circular dichroism spectroscopic data show a decrease in a-helical content of ofloxacin on interaction with Histon-DNA which was due to the partial unfolding of the protein. Synchronous fluorescence spectroscopy disclosed that the microenvironments of both tryptophan and tyrosine residues were perturbed in the presence of Histon-DNA and perturbation in the tryptophan environment was more prominent. Rayleigh scattering (RRS) intensity increases on ofloxacin concentration till it reaches to the saturation. The RRS intensity increases four times as compared to the native form of Histon-DNA complex indicating the possibility of stopple in DNA replication.

**Keywords:** Ofloxacin, DNA, Histon

**Massage Therapy for Symptom Control: in Oncological Palliative Care Patients: A Systematic Review of the Literature**

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**Abstract**

**Background:** complementary/alternative medicine (CAM) grows, patients are incorporating more CAM therapies into their conventional cancer care. Massage therapy, a CAM therapy known primarily for its use in relaxation, may also benefit patients with cancer in other ways. Massage can also be associated with risks in the oncology population. Risks can be minimized and benefits maximized when the clinician feels comfortable discussing CAM with his or her patients. This article reviews and summarizes the literature on massage and cancer to help provide the clinician with information to help facilitate discussions with patients.

**Material and Methods:** Electronic databases including PubMed, Scopus, and Cochrane library and Iranian database SID, Magiran, were searched to access the efficacy of massage in Symptom Control: in Oncological Palliative Care Patients. Out of 80 records were found in the mentioned databases, 12 related studies were included in final analysis. The review was limited to studies published between 2000 and 2015.

**Finding:** A systematic review has shown that out of 27 clinical trials testing massage interventions in cancer pain, 26 showed significant improvements in anxiety, emotional distress, comfort, nausea and pain. Another Cochrane review has concluded that massage therapy confers short-term benefits on psychological benefits, with effects on anxiety supported by limited evidence. The main outcome of a randomized control trial (RCT) involving 1290 cancer patients and massage therapy in symptoms scores for pain, fatigue, stress, nausea and depression were declined by 50%, however the effects of massage were short-term.

Conventional care for patients with cancer can safely incorporate massage therapy, although cancer patients may be at higher risk of rare adverse events. The strongest evidence for benefits of massage is for stress and anxiety reduction, although research for pain control and management of other symptoms common to patients with cancer, including pain, is promising.

**Conclusions:** There is sufficient evidence to show that therapeutic massage is useful discipline in relieving various symptoms of can-
ABSTRACTS

The Concepts of Cancer in Iranian Traditional Medicine

Mohammadreza Noras

Abstract

Introduction: Cancer is a global health problem, with significant adverse impacts on patients' quality of life. In pape, we review etiology and semiology of cancer in Iranian tradition medicine textbook and conventional medicine might be aligned.

Material and methods: In review article, TIM resources including the" Canon of Medicine", "Al-Hawi" by Rhazes (864-930 AD) (18), "Kamel-al Sanaeh", by Ali Ibn al-'Abbas al-Majusi(19), "Zakhire-Kharazmshahi" by Seyed Esmail Jorjani (1042-1137 AD) (20) and "Noor-al-Teb" Iranian software was used Scientific databases including Iranian e.g. SID, Civilica, MagIran, IranDoc and international ones e.g. PubMed, Google Scholar and Scopus were searched, using the following keywords: Traditional medicine, Avicenna, Humor, Temperament, cancer, no time limitations were considered.

Findings: In some patients the progresses of disease could weaken the organ function and lead to conditions such as weakness and cancer. Cancer is caused by coldness and dryness materials in the organ. In TIM literature, cancer is referred to as "O'ram solb". "O'ram" or "waram" can be divided into two general categories of hot/cold and soft/hard waram. "O'ram" depletes and recovers in the natural course or becomes chronic. In TIM, this is also known as "waram solb".

Discussion: Based on TIM literature, the behavior of cancer can be considered in hot and cold dry of homer. These changes in the temperature of the organ and homer cause combustion (a biochemical or biological process) in the disease-causing matters. Based on the extent of combustion, more warmth, dryness and damage may be observed in the produced material (dry and hot), causing chronic inflammation (Waram) as seen in the final stages of cancer. Moreover, in case the combustion of matter continues, and its chemical or biological changes in the structure occur and the temperament of the organ changes from hot to cold and dry with a more destructive power. Additionally, the development of a dry solid tumor and cancer is facilitated.

Conclusions: Cancer in TIM is the equivalent "O'ram solb". In fact, the clinical course of cancer in ITM and conventional medicine are similar. The orientation of "World Health Organization" towards the use of traditional medicine has promoted the medical capacity to investigate and explore new fields. Integration of traditional and conventional approaches for the analysis, diagnosis and treatment of diseases could provide a new integrated model for dealing with patients.

Keywords: Traditional Iranian Medicine; Cancer; Solid tumors; O'ram solb

Razavi Int J Med. 2016 May; Special Issue: e6099.

Protective Effect of Complementary and Alternative Medicine in Cancer (A systematic Review of the Literature)

Mohammadreza Noras

Abstract

Introduction: A considerable number of cancer patients use complementary medicine therapies in order to alleviate different symptoms such as pain, anxiety, and depression, occurring in connection with cancer. This paper explores the question to what extent CAM therapies are able to reduce the amount of pain, anxiety, and depression and other complication of cancer patients. The present study aimed to evaluated a review of evidence CAM therapies in cancer patients.

Material and methods: PubMed, Cochrane Library, Scopus, google scholar and Iranian database SID, Magiran were searched with keywords like CAM and cancer pain, cancer pain and yoga, acupuncture and cancer pain, Hypnotherapy and cancer pain, reflexology and cancer pain, aromatherapy and cancer pain. Cognitive Behavioral Therapy and cancer pain, music therapy and cancer pain, biofeedback and cancer pain. Emphasis was directed towards systematic reviews and meta-analysis on various topics pertaining to CAM and cancer pain. The review was limited to studies published between 2000 and 2015.

Findings: CAM therapies for cancer is a holistic approach. Acupuncture, yoga, massage, Meditation, progressive relaxation, dreaming, rhythmic respiration, biofeedback, therapeutic touching, transcutaneous electrical nerve stimulation (TENS), hypnosis, musical therapy, the skin stimulation techniques include hot- cold treatments, exercise, positioning, movement restriction-resting, hydrotherapy, and reflexology are used especially for reducing end stage cancer and side effects of chemotherapy and to increase living quality. Buffart et al., have conducted a systematic review and meta-analysis on physical and psychosocial benefits of yoga in cancer patients and survivors. Research supports that hypnosis can reduce anticipatory nausea and vomiting. A systematic review of 18 clinical trials reveal that aromatherapy has short term benefits on depression, anxiety and overall well-being, improved sleep and better pain control. Research reports that music therapy can help decrease the nausea and vomiting in patients undergoing radiotherapy and chemotherapy.

Conclusion: This paper focuses on CAM therapy for control cancer. There has been a rapid growth in CAM therapies for cancer patients in the recent years. However, research is needed to provide evidence that CAM therapy is effective for cancer, and the feasibility, practicability, safety of patients and improving both the quality and quantity of life of cancer patients.

Keywords: Complementary and Alternative Medicine, Cancer, CAM Therapy

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Psychological Stress May Have an Impact on Cancer

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Abstract

People who have cancer may find the physical, emotional, and social effects of the disease to be stressful. Those who attempt to manage their stress with risky behaviors such as smoking or drinking alcohol or who become more inactive may have a poorer quality of life after cancer treatment. Experimental studies showed that psychological stress can affect a tumor growth and spread. For instance, some research have shown that tumors were more likely to grow and spread (metastasize) when kept under stressful conditions. In a recent study, tumors transplanted into the mammary fat pads of mice had much higher rates of spread to the lungs and lymph nodes if the mice were chronically stressed than if the mice were not stressed. Studies on cancer cells indicated that the stress hormone norepinephrine, part of the body’s fight-or-flight response system, may promote angiogenesis and metastasis. Women who treated with neoadjuvant chemotherapy using beta blockers (interfere with certain stress hormones) had a better chance of surviving their cancer treatment without a relapse than women who did not report beta blocker use. Although there is still no strong evidence that stress directly affects cancer outcomes. It may be that people who feel helpless or hopeless do not seek treatment when they become ill, give up prematurely on or fail to adhere to potentially helpful therapy, engage in risky behaviors such as drug use, or do not maintain a healthy lifestyle, resulting in premature death.

Keywords: Psychological Stress

Relationship Between Adiponectin and Cancer

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Abstract

Objectives: Complementary medicine has been defined as any diagnosis, treatment or prevention that complements mainstream medicine by contributing to a common whole, by satisfying a demand not met by orthodoxy or by diversifying the conceptual framework of medicine. The use of complementary medicine has increased steadily over the past 15 years or so, and undoubtly it has gained medical, economic and sociological importance.

Method: This study is a reviewed article that is provided by internet resources and books.

Results: Complementary medicine use among cancer patients varies according to geographical area, gender, and disease diagnosis. The prevalence of complementary medicine use among cancer patients in the United States has been estimated to be between 7% and 54%. Most cancer patients use complementary medicine with the hope of boosting the immune system, relieving pain, and controlling side effects related to disease or treatment. This review article focuses on practices belonging to the complementary medicine domains of mind-body medicine, complementary medicine botanics, manipulative practices, and energy medicine, because they are widely used as complementary approaches to palliative cancer care and cancer symptom management. In the area of cancer symptom management, auricular acupuncture, therapeutic touch, and hypnosis may help to manage cancer pain. Music therapy, massage, and hypnosis may have an effect on anxiety, and both acupuncture and massage may have a therapeutic role in cancer fatigue. Acupuncture and selected botanicals may reduce chemotherapy-induced nausea and vomiting, and hypnosis and guided imagery may be beneficial in anticipatory nausea and vomiting. Transcendental meditation and the mindfulness-based stress reduction can play a role in the management of depressed mood and anxiety.

Conclusions: It is imperative that health professionals explore the use of complementary medicine with their cancer patients, educate them about potentially beneficial therapies in light of the limited available evidence of effectiveness, and work towards an integrated model of health-care provision.

Keywords: Complementary Medicine, Cancer

Use of Complementary Medicine in Cancer Patients

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Abstract

Adiponectin is secreted from adipose tissue and also has an anti-inflammatory, anti-obesity and anti-diabetes function. Numerous surveys have examined the relationship between adiponectin and various cancers. Recent studies suggest an inverse relationship between adiponectin and risk of breast cancer. It’s the case-control studies and prospective, premenopausal women and postmenopausal women were observed. The risk of endometrial cancer in women who had high plasma adiponectin levels is lower than those
who had low levels of adiponectin and the risk of prostate cancer and benign prostatic hyperplasia in men with low levels of testosterone is more likely than others. Studies suggest an inverse relationship between serum concentrations of adiponectin, with the risk of colorectal cancer. Also it seems inverse relationship between plasma adiponectin and pancreatic cancer in men.

**Conclusion:** It could be concluded that serum adiponectin levels appear to be significantly inversely associated with risk of different cancer. This hormone through various mechanisms, directly or indirectly, inhibits the growth and proliferation of cancer cells.

**Keywords:** Cancer, Adiponectin

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**The Role of Curcumin in Cancer Treatment: The Call of Nature**

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**Abstract**

**Background:** Cancer is one of the leading causes of morbidity and mortality worldwide, with nearly 14 million new cases and 8.2 million cancer related deaths in 2012. Available anti-cancer drugs have severe side effects and are also expensive. So, the more researches for identifying new pharmacological agents, without this disadvantage, are needed.

Curcumin, a polyphenolic compound which derived from Turmeric, is one of such agents. Turmeric is a rhizome from the herb Curcuma Longa. Its powder has 77% Curcumin that has been shown to be pharmacologically safe compound with a very low or no toxicity.

**Method:** We searched the PubMed and Google Scholar databases using the search terms: Curcumin, Cancer and Clinical Trial. 15 studies were identified and reviewed. The articles were published from 2002 up to 2016.

**Results:** Among studies, there was an emphasis on apoptotic, anti-proliferative and anti-angiogenic properties of Curcumin. It can suppress cell growth and tumor formation by inhibiting several cell signaling pathways such as transcription factors (NF-kB and AP-1), enzymes (COX-2, MMPs), cell cycle arrest (cyclin D1), proliferation (EGFR and Akt), survival pathways (bcatenin and adhesion molecules), and TNF. Curcumin up-regulates caspase family proteins and down-regulates anti-apoptotic genes (Bcl-2 and Bcl-XL).

Pre-clinical studies in a in a variety of cancer cell lines including breast, cervical, colon, lung, gastric, hepatic, leukemia, melanoma, lymphoma, oral epithelial, ovarian, pancreatic, and prostate have demonstrated that Curcumin has anti-cancer activity in vitro and in pre-clinical animal models. It’s important that cancerous cells arrested in mitosis due to Curcumin treatment, acquire double-strand DNA damage. Curcumin also induce apoptosis in cells selectively.

Thus using Curcumin as an anti-cancer drug is safe and without side effects. A study showed Curcumin induces cell apoptosis in Non-Small cell lung cancer by increasing the level of intracellular free calcium. NSCLC is responsible for nearly 85% of the total lung cancer cases that isn’t sensitive to the majority of conventional cytotoxic treatments, such as chemotherapy and radiotherapy. In another studies, showed that Curcumin can suppress the proliferation of both the androgen-dependent prostate cancer cell line, LNCaP, and the androgen-independent DU145 line. And also in a clinical trial on intravaginal application of curcumin based capsule or vaginal cream at bed time for 4 weeks has shown remarkable (~80%) clearance of the virus. HPV is a small DNA tumor virus which has been shown to be prevalent in about 90% of cervical cancers and 70% of vaginal cancers.

**Conclusion:** Curcumin, A derivative of turmeric, has great anti-cancer effects, demonstrated by various researches. Although Curcumin-based drugs in near future will play a significant role in healing cancer patients, using turmeric powder as a dietary supplement is an easy way toward cancer treatment and chemoprevention.

**Keywords:** Curcumin, Cancer treatment, Turmeric, Chemoprevention

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**Design and Construction an Antibody for Targeting Cancer Stem Cells**

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**Abstract**

**Introduction:** Tumor recurrence and metastasis remain major obstacles for improving overall cancer survival, which may be due at least in part to the existence of cancer stem cells (CSCs). Signaling pathways of CSCs are Wingless/integrate-1 (Wnt), Hedgehog (Hh) and Notch pathway. WNT signaling is a critical pathway for regulation of cell destiny, development of different organs and regulation of tissue self-renewal; however, it also underlies several pathological states in human, including various cancers and fibroproliferative diseases in several organs. In recent years, Wnt Pathway has many applications in the Targeted therapy. We expect, antibodies which target Wnt Pathway, could be blocked amplification of CSCs. In this study an anti-wnt antibody has been designed and computational model was made.

**Materials and Methods:** In order to production of antibody in bacterial host, a gene cassette was designed that include the scFv sequence of anti-CSC antibody. StII signal sequence added to start bacterial host, a gene cassette was designed and computational model in several organs. In recent years, Wnt Pathway has many applications in the Targeted therapy. We expect, antibodies which target Wnt Pathway, could be blocked amplification of CSCs. In this study an anti-wnt antibody has been designed and computational model was made.

**Results:** Anti-Wnt antibody expression cassette designed successfully. Assessment of creating model shows a stable Ramachandran plot analysis showed that conformations for the most amino acids are within the most favored regions.

**Conclusion:** Therapeutic targeting of CSCs is a critical strategy to suppress tumor regression. Crosstalk being between the WNT and other important Pathways in cancer have been established.

**Keywords:** Cancer Stem Cells, Antibody, WNT
Herbal Medical in Cancer (Evidence – Based review)
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Abstract
Introduction: In the Traditional Medicined treatment of cancer is different to modern medicine, plant, inorganic, and animal drugs used in cancer in the TM. In recent years, natural products from the Herbal medicine had been investigated for their anticancer. The present study was carried out to determine the cancer and herbal Medicine.

Material and methods: Electronic databases including PubMed, Scopus, and Cochran library were searched to access studies giving any in vitro, in vivo, and human evidence on the efficacy of herbal Medicine in cancer. Data were collected for the years 1990 to 2014. Out of the 400 records found in the mentioned resources, 22 related studies were included in the final analysis.

Findings: According to recent surveys, many cancer patients use complementary and alternative medicines, including phytochemicals in addition to, or following the failure of standard cancer therapy. Several studies have referred to herbal medicine such as: (Olea Europeae) Olive, Nigella Sativa (Black Seeds), Crocus Sativus (Saffron), Punic Granatum (Pome granate), Urtica Dioica (Nettle), Allium Sativum L, and Allium Cepa (Garlic and Onion), onion, Arum Palaeastinum (Palestinian Arum), and Vitis Vinifera (Grapes) to the biological activities such as stimulation of the immune system, anti-inflammatory, antioxidant, ant mutagenic, and anticancer effects.

Conclusion: This finding makes the clinical role of anticancer herbs, one of strong relevance to the health, well-being, and ultimately the survival of these patients. With their low toxicity and long history of empirical support, the use of these herbs as anticancer may have therapeutic applications in the setting of integrative medicine. Our study demonstrated, although there are evidences about the efficacy of various Herbs, more investigations are needed to prove this impact in human. So past medical literature is a valuable source of information which entails potential research topics for contemporary scientific work.

Keywords: Herbal Medicine, Cancer, Medicinal Plants

Multidisciplinary Cancer Care and Patient Survival: a Brief Review
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Abstract
Multidisciplinary care was well-defined as involvement of a team of clinical and allied specialists whose intent is individualized patient management. Current cancer management is increasingly becoming more sophisticated and specialized. From the detection of a lesion and recognition of its clinical and radiologic characteristics, to its confirmatory diagnosis and treatment, the management trajectory for a cancer patient is a multidisciplinary and frequently multimodal path requiring the input of many uniquely qualified individuals. The challenge lies in efficiently and effectively coordinating these key individuals to optimize the delivery of cancer care for health care providers and for patients. Multidisciplinary care can flourish in many formats. Diverse input on patient management can be achieved through multidisciplinary clinics, organization of a hospital-wide multidisciplinary cancer program, creation of multidisciplinary diagnosis and treatment protocols, formation of a cancer service collaborative, or the use of multidisciplinary cancer conferences. Multidisciplinary care has been variably defined, but fundamentally encompasses collaborative patient care by a team of individuals where all diagnostic and treatment options are discussed and custom-made for each patient. Although the team arrangement may vary by disease site and institution, independent contributors may include representatives from medical oncology, radiation oncology, surgical oncology, medical genetics, pathology, and nursing.

Keywords: Multidisciplinary care, Cancer care, Patient survival.
**ABSTRACTS**

radiation oncology, surgery/surgical oncology, pathology, diagnostic imaging, palliative care, nursing, nutrition, and social work. The aim is to warrant the patient receives best care and support. In cancer care should be selected to organize and coordinate the whole range of cancer services.

**Keywords:** Cancer Care

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**Psychosocial Care in Cancer**

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**Abstract**

A number of important documents have been reported in the last 5 years regarding the right of cancer patients to have their psychosocial needs recognized and addressed. The evidence was well-defined that ‘attending to psychosocial needs should be an integral part of quality cancer care. It is not possible to deliver good quality cancer care without addressing patient’s psychosocial health needs’. the Council of the European Union (EU) published the significance of psychosocial aspects of cancer care and stated that ‘to attain optimal results, a patient-centered comprehensive interdisciplinary approach and optimal psychosocial care should be implemented in routine cancer care, rehabilitation and post-treatment follow-up for all cancers’, with an open call to all EU member states ‘to take into account the psychosocial needs of patients and improve the quality of life for cancer patients through support, rehabilitation and palliative care’. The International Psycho-Oncology Society contributed in a survey aimed at clarifying access to psychosocial care. In some countries, especially developing countries, the psychosocial oncology is either not established or not completely established, or not an integral part of care. Future targets need to focus on the integration of psychosocial oncology programs into comprehensive cancer care and their coordination within multidisciplinary teams.

**Keywords:** Cancer

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**Fruits and Vegetables Reduce Cancer**

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**Abstract**

Cancer is a disease in which cells grow and divide with little or no control. There are many different types of cancer. It has been estimated that 30–40 percent of all cancers can be prevented by lifestyle and dietary measures alone. One of the most important messages of modern nutrition research is that a diet rich in fruits and vegetables protects against cancer. For most cancers, people in the lower quartile (1/4 of the population) who ate the least amount of fruits and vegetables had about twice the risk of cancer compared to those who in the upper quartile who ate the most fruits and vegetables. There are several groups of fruits and vegetables that may offer particularly protective effects such as dark green and orange vegetables, cruciferous vegetables (cabbage, broccoli), flavonoids (soy, tea), legumes, sulfides (garlic, onion), and tomato products. Many of researching reveal that plants and particularly raw vegetables contain many beneficial compounds such as vitamins, minerals, antioxidants, phytochemicals, and fiber. Also a protective effect of greater their consumption is consistent for cancers of the stomach, esophagus, lung, oral cavity, pharynx, endometrium, pancreas, and colon. Researchers are still examining the effects of these complex interactions.

**Keywords:** Cancer

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**Dietary Factors and Cancer**

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**Abstract**

Cancer is a general term that refers to the rapid formation of abnormal cells that grow beyond their normal boundaries. Cancer can affect any part of the body, and originates from a single cell that transforms into a tumor cell through interactions between genetics and external agents. Lifestyle risk factors for cancer are usually preventable, and avoiding certain factors may lower one’s risk in developing cancer. Key lifestyle increased factors of cancer include: overweight, unhealthy diet high in processed foods, lack of physical activity, tobacco use, alcohol use, infections, environmental pollution, occupational carcinogens, and radiation, very hot drinks and food, salt preserved foods and salt, preserved meat and red meat, animal fats, heterocyclic amines, aflatoxin, polycyclic aromatic hydrocarbons, nitrosamines. It has been estimated that 30–40 percent of all cancers can be prevented by lifestyle and dietary measures alone. Overweight/obesity increases the risk for cancers of the oesophagus (adenocarcinoma), colorectum, breast (postmenopausal), endometrium and kidney. The most important factor in the relationship between diet and prevention of cancer is healthy weight maintenance throughout life.

**Keywords:** Cancer

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**TOX3 and Cancers; a Systematic Review**

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**Abstract**

Cancer is a disease in which cells grow and divide with little or no control. There are many different types of cancer. It has been estimated that 30–40 percent of all cancers can be prevented by lifestyle and dietary measures alone. One of the most important messages of modern nutrition research is that a diet rich in fruits and vegetables protects against cancer. For most cancers, people in the lower quartile (1/4 of the population) who ate the least amount of fruits and vegetables had about twice the risk of cancer compared to those who in the upper quartile who ate the most fruits and vegetables. There are several groups of fruits and vegetables that may offer particularly protective effects such as dark green and orange vegetables, cruciferous vegetables (cabbage, broccoli), flavonoids (soy, tea), legumes, sulfides (garlic, onion), and tomato products. Many of researching reveal that plants and particularly raw vegetables contain many beneficial compounds such as vitamins, minerals, antioxidants, phytochemicals, and fiber. Also a protective effect of greater their consumption is consistent for cancers of the stomach, esophagus, lung, oral cavity, pharynx, endometrium, pancreas, and colon. Researchers are still examining the effects of these complex interactions.

**Keywords:** Cancer
Abstract

Introduction: Cancer is one of the most serious fatal diseases and health concerns which can affect any human organ. Combinations of genetic and environmental factors, which may cause different susceptibility from person to person, are involved in pathogenesis of cancer. TOX3 (TOX high mobility group box family member 3) is among the potential genetic factors which influence the cancer risk. TOX3 maps to chromosome 16q12. It has calcium (Ca2+) dependent transcriptional activity and is a co-factor of CRE response element (CRE) binding protein (CREB) and CREB binding protein (CBP). TOX3 is a nuclear factor in brain but recently, it is presented as a related cancer element. The aim of this systematic review was to determine the extent of TOX3 association with different cancers.

Methods: ISI Web of Knowledge, Science direct, Pubmed, Scopus and Google Scholar were searched for related studies using the related keywords. Relevant and available articles were selected for inclusion in this study.

Findings: Studies have shown that TOX3 is associated with several cancers including gastric, melanoma, lymphoblastic leukemia, central neurocytoma, pineocytoma, ovarian and multiple primary cancers. The TOX3 function on SPP1 (Secreted phosphoprotein 1) and is associated with lung adenocarcinoma. The involved mechanisms may vary as in the case of glioblastoma, it reduces metabolic rate and tendency of the cells to change shape, which suggests a possible implication of TOX3 in extracellular matrix composition. The TOX3 also induces expression and activation of the f-los promoter and furthermore, variations of TOX3 lead to enhanced FOXA1 bindings on TOX3 gene in breast cancer. It is also implicated as a tumour promoter in breast cancer. Over-expression of TOX3 showed that it mainly influenced the interferon signaling pathway (especially STAT1) as what happens in bladder cancer. MiRNA-196b has also been considered as a target for TOX3 in rectal cancer.

Conclusion: TOX3 may exert influence on different cancers by different mechanisms. Shedding light on the function and its regulatory mechanism would help better understanding of cancer management including diagnosis, and therapy, especially in breast cancer. However, in addition to replication in different populations, functional studies are still required for illustrating the involved pathways.

Keywords: TOX3, Cancers, Function, Effect

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Abstract

An Overview of Circulating Tumor DNA as a Diagnostic and Prognostic Biomarker

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Abstract

Context: Cell-free tumor DNA (ctDNA) present in serum or plasma is proposed to be released from tumor and is known to have the potential to enable non-invasive diagnostic tests that could be used as a surrogate for tissue biopsy molecular information. Screening ctDNA for somatic mutations is a way to detect and follow the progression of patient's tumor.

Evidence acquisition: This study is an overview of 30 articles on potential of ctDNA as a non-invasive diagnostic and prognostic biomarker. They were published in Medline within the past 5 years. Studying these data revealed differences between ctDNA and other circulating biomarkers.

Result: Mutation status, genomic alternations or instability and methylation status are properties of ctDNA which could be ascertained to obtain a good view of the tumor. Upon tumor development, ctDNA carrying tumor-specific molecular alterations is released into bloodstream, at levels relative to tumor burden. Following surgery, ctDNA levels reflect removal of the tumor. Throughout chemotherapy treatment, and upon completion, ctDNA can be used to monitor patient response and prognosis. Correlation between ctDNA and treatment response was assessed by different assays targeting mutations previously identified by genomic characterization of each patient’s tumor, such as targeted sequencing, whole genome sequencing, exome sequencing and digital PCR. Circulating tumor DNA shows superior sensitivity to other circulating biomarkers and has a greater dynamics range that correlates with changes in tumor burden.

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Conclusion: ctDNA has been reported to be useful for quantitation of tumor burden in response to surgery, treatment or as a measure of overall survival in a number of malignancies. The clinical utility of this biomarker, and the risks and benefits accruing from knowledge of ctDNA levels, can only be addressed through longitudinal studies of ctDNA in appropriate populations of patients. Techniques need standardization and the utility of different targets needs careful evaluation.

Keywords: Circulating tumor DNA, Biomarker, Prognosis, Diagnosis, Cancer

Micro-RNA 499 Polymorphism as a Clinical Biomarker in Cancers

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Abstract

Background: Micro-RNAs are a class of small (~18-24 nucleotides) non-coding RNA molecules that functioning as post-transcriptional suppressors of mRNA translation. Single nucleotide polymorphisms (SNPs) in miRNAs were found to be associated with wide range of cancers. An A/G polymorphism (rs3746444) in the sequence of miR-499 can affect miRNA maturation process, therefore it is contributing to cancer susceptibility. All together, the goal of this study is to improve biomarker discovery and help cancer treatment.

Methods: We retrieved publications for miR-499 biomarker usefulness in cancer from PubMed. The database was queried by these keywords: “miR-499”, “polymorphism”, “cancer” and “biomarker”. Further we refine publications to set premium to papers with well controlled strategy and large sample size.

Results: It has been shown that the G allele was associated with an increase in cancer risk compared to the A allele.

Conclusion: According to our results, miR-499 rs3746444 polymorphism is associated with an increased cancer risk, especially in Asian population. Thus it could serves as biomarker with diagnostic, prognostic and treatment response predictor and therapeutic target.

Keywords: miR-499, Polymorphism, Cancer, Biomarker

The Effect of Nutrition on the Prevention and Treatment of Cancer

Mohammad Reza Khojasteh1,2

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2Medshad Neuroscience Research group, Mashhad, Iran

Abstract

Background: microRNAs (miRNAs) are a class of small, single strand, non-coding RNAs, 18–22 nucleotides, that are frequently dysregulated in some Cancers. Rs2292832 is a genetic polymorphism that located in the precursor of miR-149 (pre-miR49) and has been studied in diverse Cancers.

Methods: We retrieved publications for any relationship between miR-499 and Cancer from PubMed. The database was queried by these key words: “miR-499”, “rs2292832”, “Cancer”. Further we refine publications to set premium to papers with well controlled strategy and large sample size.

Results: We have found that rs2292832 have important role in cancer development. In some cancers miR-499 has a suppression function while in other Cancers, functions as an oncogenic regulator. Accordingly there is controversy about miR-49 in cancer development.

Conclusion: miR-149 functions as a tissue-based marker for Cancer detection, classification and prognostication.

Keywords: miR-149, rs2292832, Cancer, Oncogenic Regulator, Biomarker

The Effect of Nutrition on the Prevention and Treatment of Cancer

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Method: We retrieved publications for miR-499 biomarker usefulness in cancer from PubMed. The database was queried by these keywords: “miR-499”, “polymorphism”, “cancer” and “biomarker”. Further we refine publications to set premium to papers with well controlled strategy and large sample size.

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Conclusion: According to our results, miR-499 rs3746444 polymorphism is associated with an increased cancer risk, especially in Asian population. Thus it could serves as biomarker with diagnostic, prognostic and treatment response predictor and therapeutic target.

Keywords: miR-499, Polymorphism, Cancer, Biomarker
Abstract

Non-communicable chronic diseases (NCDs) are the single greatest threat to global public health and national prosperity. Unfortunately cancer is one of most common NCDs in the world that infect many people. However cancer and mechanisms of the disorder is complicated but we can prevent and control it with simple factors. One of these factor is Nutrition in healthy people and cancer patient. We investigate about 12 related article about influences of the nutrition on the prevention and degree of treatment. In the articles they check different parameter including diet, life style and drugs for patient; from mass media, clinical institutions and research centers. Although they report different result but all of them confess we haven’t complete recognition about the influences of nutrition on the healthy people and even cancer patient. We can just advice people to observe commendation for diet, physical activity, and weight management for cancer prevention and More resistance for cancer patients.

Keyword: Cancer, Nutrition, Prevention

Allopurinol Consumption and Its Effects on Tumors

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Abstract

Background: A disease in which abnormal cells divide uncontrollably and destroy body tissue is called cancer. Tumor lysis syndrome (TLS) refers to the constellation of metabolic disturbances that may follow the initiation of cancer treatment. Allopurinol is a drug that inactive xanthine oxidase enzyme to decrease uric acid in blood that is prescribed in TLS cases and other disease like gout. We want to check the effects of Allopurinol on tumors in cancer.

Method: Current data were obtained from electronic databases (PubMed and Google Scholar). In this study about 6 article were reviewed.

Result: In one article Chen CJ and his teamwork proved that consumption of allopurinol leads to bladder cancer. But Leissner and his teamwork proved that use of allopurinol leads to treatment of bladder’s tumors. Furthermore, Takashi Yasuda and his teamwork have proved that allopurinol dramatically causes apoptosis of prostate cancer cells and it’s potential to treatment of prostate cancers.

Conclusion: There are some paradoxes in effects of allopurinol on tumors. It isn’t clear that if Allopurinol destroys tumors or cause tumors.

Keywords: Allopurinol, Cancer, Tumor Lyses Syndrome

Cell Therapy in Cancer Treatment

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Abstract

Cancer is an abnormal growth of cells the nearby cause of which is an imbalance in cell proliferation and death breaking-through the normal physiological checks and balances system and the ultimate cause of which are one or more of a variety of gene alterations. Clinical trials of cell therapy for many different cancers are currently continuing. More recently, scientists have developed novel cancer therapies by combining both gene and cell therapies. Specifically, investigators have developed genes which encode for artificial receptors, which, when expressed by immune cells, allow these cells to specifically recognize cancer cells thereby increasing the ability of these gene changed immune cells to kill cancer cells in the patient. One example of this method, which is the gene transfer of a class of novel artificial receptors called “chimeric antigen receptors” or CARs for short, into a patient’s own immune cells, typically T cells. Researchers believe that this method may hold promise in the future for patients many different types of cancer. Cell therapy can be used as a novel and functional method for cancer treatment.

Keywords: Cancer
Relationship of Gelatinase A & B with Tumor Grading in Colorectal Cancer

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Abstract

Background: Colorectal cancer with a high mortality rate is the second cause of cancer-related deaths. The only reliable method for diagnose colorectal cancer is biopsy and histological examination that unfortunately, is totally an invasive method. In this study activity of MMP-9 (gelatinase B), MMP-2 (gelatinase A), Dimmer MMP-9, and NGAL/MMP-9 complex is examine in serum of people with colorectal cancers and control group. The aim of this study is considering these enzymes in colorectal cancer and simultaneously, as a marker at different stages of cancer pointing out their superiority partially according to being non-invasive of the method.

Materials and Methods: In this study, 33 patients with colorectal cancer and 20 healthy individuals were selected. 10 ml blood of all people collected and serum was isolated. Thezymography technique done to check the activities of matrix metalloproteinase.

Findings: The result of comparing enzyme activity of MMP-2 between stages 1 and 2 of colorectal cancer was not significantly different, while between stages 1 and 3 as well as 2 and 3, the difference was significant. The relationship between the staging of colorectal cancer and the activity of MMP-9 and NGAL/MMP-9 was positive and direct, but its relationship with the activity of MMP-2 and MMP-9 dimmer was reverse and negative. The sensitivity and specificity of the activity of MMP-9 and NGAL/MMP-9 for the detection of colorectal cancer were 87 and 85, 66 and 65 %, respectively.

Conclusion: With these considerations we concluded that the use of this method to metalloproteinase, especially MMP-9 will be good in the diagnosis and determination of the degree of cancer.

Keywords: Colorectal Cancer, Gelatinase B, Gelatinase A, zymography

Gene Therapy, a New Advance in Treatment of Colorectal Carcinoma

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Abstract

Colorectal cancer (CRC) is among the 5 top common cancers diagnosed worldwide. Most of the CRCs occur due to the changed lifestyle, while only a minority of cases is associated with underlying genetic disorders. Several therapeutic modalities have been used, alone or in combination, for CRC treatment including surgery, chemotherapy, radiotherapy and targeted therapy. Although effectiveness of conventional therapies depends on the disease grade/stage, as well as the age of patient, increased resistance of cancer cells to current therapeutic modalities has made it crucial to seek for novel and more effective approaches. Recent studies have introduced gene therapy as a new strategy for cancer treatment, due to the specific targeting of the tumor site that reduces systemic toxicity of conventional drug therapy. Nevertheless, to refine CRC-gene therapy, it is necessary to improve the antitumor potency, efficiency of gene delivery, and accuracy of gene targeting. In the United States, for instance, 60% of all gene therapy clinical trial protocols belong to cancer gene therapy. To note, most of these trials are in phase I safety/toxicity studies, and 15% are phase III randomized studies against current best practice. Future efforts in developing novel gene delivery vectors, and in exploring detailed molecular aspects of tumor biology would help us to overcome current hurdles in CRC-gene therapy.

Keywords: GeneTargeting, Colorectal Cancer, Gene Delivery.
FDG PET/CT in the Management of Colorectal and Anal Cancers

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Abstract

Objective: CT remains the imaging modality of choice in the diagnosis of colorectal cancer (CRC) and anal cancer. However, advances in imaging have expanded the role of MRI and PET/CT. This article focuses on the evolving role of FDG PET/CT in the diagnosis, radiation therapy planning, therapy assessment, and post therapy monitoring of CRC and anal cancer.

Conclusion: FDG PET/CT is a valuable imaging modality that impacts the clinical management of patients with CRC and those with anal cancer.

Keywords: FDG PET/CT, Radiotherapy, Colorectal Cancer

Detection of M2-PK iso-enzyme in Serum and Stool Samples of Patients for the Screening of Colorectal Cancer

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Abstract

Context: Colorectal cancer is the third and fourth most common cancer among women and men, respectively. Every year it involves 4000 new cases and kills 1550 people. Lack of early symptoms results in tumors being diagnosed in higher stages. Screening in early stages can contribute to early diagnosis and primary prevention of colorectal cancer.

Evidence Acquisition: A brief literature search in two authentic scientific databases (i.e. PubMed and Scopus) revealed several related papers. Two expert authors selected a few of the most reliable, most valid and the most recent articles to be included in the final synthesis.

Results: Colonoscopy, which is among common diagnostic methods for colorectal cancer, is an invasive method with occasional false negative results. Stool occult blood, another common screening method, has low sensitivity and is affected by nutritional intake. Therefore, new alternative screening methods are needed. M2-PK test is a diagnostic method with specificity of 92.5% and sensitivity of 80% for detection of colorectal tumors. Different tissues secrete different iso-enzymes of pyruvate kinase (PK), based on their metabolism. However, during tumor formation, the tissue-specific iso-enzymes disappear and M2 dimeric iso-enzyme of pyruvate kinase (Tumor-M2-PK) is expressed in the tissue. This iso-enzyme is expressed and secreted in blood in many types of cancers, but it is secreted into the stool only in colorectal cancer.

Conclusion: Detection of M2-PK iso-enzyme in the stool of patients with colorectal cancer, using ELISA and lateral flow rapid test, can be a specific and effective method for screening. Considering the high sensitivity and specificity of this test, it is strongly recommended as an alternative screening method for colorectal cancer in the near future.

Keywords: Colorectal Cancer, M2-PK test, Screening

Vitamin D and Colorectal Cancer: A review

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Abstract

Introduction: Colorectal cancer (CRC) is the second among women and third among men of the most commonly diagnosed cancers in the world. Furthermore, during the last 5 years, CRC incidence and mortality rates have increased in all developed countries especially in Iran.

However, the combination of surgery and chemotherapy has been improved but there is no cure for that, so studies are essential to find a preventive effect or reduce the risk of CRC.

There are different types of vitamin D but most important of them is vitamin D3 (Cholecalciferol) Vitamin D3 can be obtained from dietary sources, but most vitamin D3 is generated in the human skin under the influence of sunlight the role of vitamin D in cancer incidence, progression and mortality has been studied in detail examining the role of vitamin D in colorectal adenoma incidence and recurrence provides important information regarding its potential for preventing colorectal malignancies during first steps in the carcinogenesis pathway.

Objective: This study has been conducted to overview and synthesize the epidemiological research regarding vitamin D, as measured by the biomarker 25-hydroxycholecalciferol [25(OH)D], and the incidence, progression and mortality of CRC.

Method: Articles were obtained from PubMed, Google Scholar, Medline, Science Direct and SID data bases only papers included that using the biomarker 25-hydroxycholecalciferol [25(OH)D] for measuring vitamin D status

Conclusion: after more than two decades of research into the association of vitamin D and cancer, results of association studies between 25(OH)D and Colorectal cancer have indicated consistent inverse relationships for colorectal adenoma incidence, colorectal cancer incidence and mortality but not recurrence. And still need further investigation.

Keywords: Colorectal Cancer, Vitamin D, 25(OH)D
Impact of Metabolic Syndrome on Colorectal Cancer

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Abstract

Background: The metabolic syndrome (Mets) is a risk factor for cancer. Metabolic syndrome describes a sum of factors including central obesity, hypertension and raised plasma glucose, triglycerides and high-density lipoprotein (HDL) cholesterol, the most recent being the confirm definition where 3 of the 5 risk factors are present. Cancer starts when cells in the body begin to grow out of control, and can spread to other areas of the body. The colon and rectum are part of the large intestine. Colorectal cancer occurs when tumors form in the lining of the large intestine. Among cancers that affect both men and women; colorectal cancer is the second leading cause of cancer deaths in the United States and is the third in Iran. Therefore, this study was aimed to investigate a comparison between colorectal cancer in patient with and without metabolic syndrome. In more recent years’ cancer links with Mets have been explored. Multiple studies and epidemiological data have suggested the risk of cancer in individuals with Mets. Some studies have reported an association between precursor lesions such colorectal adenomas with Mets.

Methods: According to my investigation in 15 articles, for example in one of them, which studied included 141 patients with colorectal cancer, with an average age of 61 years (range 29-91). Forty-two (36.8%) patients had metabolic syndrome.

Results: According to the findings of my researches in PubMed and MedlinePlus, it may be persons who have metabolic syndrome and they have more preparation detect colorectal cancer.

Conclusion: Due to my researches preventing and controlling the components of Mets could be important, changes in lifestyle and dietary habits. Lifestyle modifications including increased physical activity and dietary changes are considered a paramount component of treatment for with strong evidence in its efficacy of treating individual components. Also there are several screening test options, for example Colonoscopy (every 10 years) and High-sensitivity fecal occult blood test (FOBT), stool test, or fecal immunochemical test (FIT). So colonoscopy in lower age in this group with risk factor is offered in order to screening and prevention from malignant colorectal lesions.

Keywords: Colorectal Cancer, Metabolic Syndrome

Resistance of Colon Cancer Stem Cells to Chemotherapeutic Agents

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Abstract

Cancer stem cells (CSCs) represent a population of cells within tumor with high self-renewal, tumorigenic and therapy-resistant properties. Accumulating evidence indicated the existence of CSCs in human colorectal cancer (CRC). In recent years, utilization of monoclonal antibodies against CSC markers CD24, CD44, CD133 and LGR5 has lead to the enrichment of CRC-CSC in human tumors and cancerous cell lines. Multidrug resistance (MDR) is defined as irresponsiveness of CSCs to a range of cytotoxic agents that do not have

Detection of Vimentin Gene Methylation in Diagnosis and Screening of Colorectal Cancer

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Abstract

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ABSTRACTS

common mechanism of action. Main reason for development of MDR phenotype is over-expression ATP-binding cassette (ABC) transporters. For instance, a functional relationship has been reported between resistance of colon cancer cells to 5-fluorouracil-based therapy, which acts by incorporation into DNA and RNA molecules, and ABCC1 expression. Since CRC-CSCs are resistant to anti-neoplastic therapy and cause disease recurrence and metastasis, it is crucial to design more curative approaches for eradication of CSCs. Accordingly, high affinity substrates, which increase the cytotoxic action of MDR-related anticancer drugs by preventing their efflux from target cells, have been introduced. The main goal of these modulators is to maximize therapeutic outcome by synergic activity without increasing toxicity at tolerable doses. The other promising strategy is development of drug delivery systems based on liposomes to enhance drug delivery to CRC-CSCs and reduce plasma protein binding.

Keywords: Colorectal Cancer, Cancer Stem Cells, Chemotherapy Resistance

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Comparing Cytotoxic Effects of Anticancer Agents Vincristine, Doxorubicin and Auraptene on Colon Carcinoma Cells

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Abstract

Colorectal carcinoma (CRC) is one of the most common malignancies worldwide. In our country Iran, colon cancer has been reported as the fifth and fourth frequent cancer among men and women. Despite advances in cancer therapy, CRC patients still suffer from cancer recurrence and metastasis. In present study, we investigated the cytotoxic effects of routine anticancer drugs, vincristine and doxorubicin, as well as auraptene, a natural coumarin with various biological activities. To do so, HT-29 cells, a human colon carcinoma cell line, were treated with increasing concentration of drugs during three continuous days, and viability of cells was evaluated by MTT assay. Results of MTT assay revealed that 5, 10, and 40 µg/ml vincristine had no significant toxic effects on HT-29 cells after 24 and 48 h, while IC50 of vincristine was determined as 72 h after treatment. In addition, studying effects of 5, 10, and 40 µg/ml doxorubicin indicated that the IC50 of this drug was 9 µg/ml after 72 h. Analyzing effects of auraptene (10, 20, 40 and 80 µg/ml), in comparison with its relevant DMSO control (0.8%), revealed that this coumarin induced cell death in its highest concentration 72 h after treatment. Overall, results of current attempt demonstrated low sensitivity of HT-29 cells to vincristine, doxorubicin and auraptene during three days. Since it has been reported that synergic activity of auraptene increases efficacy of anticancer drugs, this coumarin could be used as a suitable agent in future in vitro studies.

Keywords: Colon Carcinoma Cell, Vincristine, Doxorubicin, Auraptene

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Trefoil Factor Family in Screening of Gastric Cancer

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Abstract

Introduction: Gastric cancer is the third most common cancer and is the second leading cause of cancer death worldwide. Although the global incidence of gastric cancer has been decreased dramatically in recent decades, it is the most common cancer in the north and northwest of Iran. However, the operation procedures for gastric cancer have been improved but there is no cure for that. Therefore, molecular studies are necessary to identification of factors that they can help in early detection. Trefoil Factor Family (TFFs) are small and stable molecules secreted by the mammalian gastrointestinal tract. TFFs constitute a family of three peptides (TFF1, TFF2 and TFF3) that are widely expressed in a tissue-specific manner in the gastrointestinal tract. So measurement the levels of TFFs in the serum may represent an improved method for detection of gastric cancer.

Objective: This study has been carried out in order to overview the role of TFFs as a biomarker in early detection of gastric cancer.

Method: This study is a comprehensive overview to detect the role of TFFs biomarker in early detection of gastric cancer, which has made use of valid papers available on databases such as PubMed, Google scholar, SID, etc.

Conclusion: In most studies, TFF3 shows the increased level in gastric cancer tissues while there is a controversy in amount of TFF1 and TFF2 in different studies. Therefore, measurement of TFFs, especially TFF3 is an available and non-invasive method to detect gastric cancer early.

Keywords: Early diagnosis, Gastric cancer, Trefoil Factor Family
Type 2 Diabetes Mellitus as Risk Factor for Colorectal Cancer.

Azmoon marzyeh, Rezae Zahra

Abstract

Background: Diabetes has been associated with an increased risk of colorectal cancer, a leading cause of cancer death in the world, in most, but not all studies. Insulin use, sex, obesity and smoking might also be associated with CRC risk. To resolve these inconsistencies, we conducted a review study of published data on the association between diabetes and the incidence of colorectal cancer.

Methods: We conducted a review study to found the association between diabetes and incidence of colorectal cancer. We identified 31 studies (7 case control study, and 15 cohort study, 8 Review and meta analysis, 1 cross sectional study) with data on diabetes and CRC by a search of pubmed and Medline databases.

Result: The results varies according to age, sex, obesity, smoking, ethnicity, duration of follow-up and study characteristics. There is a controversy about this association between males and females. But most of studies show that sex effect on site of CRC, and the result did not change after adjusting for overweight/obesity. Insulin use is not associated with a increased risk of CRC. The association with colorectal cancer risk was increase by smoking.

Conclusion: We found that the diabetic patients were significantly in higher risk for CRC. Our study suggests that this patients screens in lower intervals to prevent of CRC and some thing like sex and obesity need to more research.

Keywords: Colorectal Cancer, Diabetes Mellitus

Factors Causing Oesophagus Adenocarcinoma and GORD

Mohsen Reza

Abstract

Introduction: There is an increasing burden of gastro oesophageal reflux disease (GORD) and Barrett’s oesophagus (BO), Parallelled by an increasing incidence of oesophageal adenocarcinoma. The exact cause of gastro oesophageal reflux disease (GORD) is not clear, but has been attributed to the obesity, increasing age and changing diet. On the other hand, numerous studies have investigated the association of different blood groups with oesophageal adenocarcinoma and have suggested that, people with blood group O and RhD negative are at higher risk of developing oesophageal adenocarcinoma (OAC). According to another study, low pH has the ability to induce genes and pathways, which can provide an environment suitable for the progression of malignancy. Also GORD itself is a major cause of oesophageal adenocarcinoma (OAC). Gastro oesophageal reflux disease (GORD) followed by oesophageal adenocarcinoma, as documented by pH testing, occurs frequently in the intellectually disabled population, being found in nearly 50% of those with an IQ less than 50, while Barrett’s oesophagus is found in about 15-26%.

Methodology: By searching PubMed and Google Scholar, we found several eligible studies (the studies were conducted in South America, Middle East, and East Asia, and included both high-risk and low-risk regions). The objectives of this work are to review the literature, report the results and compare different risk areas. We conducted a review of these studies and reported the results.

Result: The studies have shown that, GORD and oesophageal adenocarcinoma are caused by the obesity, increasing age, low pH, changing diet and lower IQ level.

Conclusion: Diet can relieve symptoms of GORD but there is no evidence that what you eat to prevent Barrett’s oesophagus. However, the cancer risk in Barrett’s oesophagus and OAC can be managed by prevention (Surveillance endoscopy), treating underlying gastrointestinal reflux disease (medically or surgically) and endoscopic therapy.

Keywords: Oesophageal adenocarcinoma, GORD, Barrett’s oesophagus.

Assessment of HER-2/neu Gene Amplification by Chromogenic in Situ Hybridization (CISH) Compared to Immunohistochemistry (IHC) Method in Gastric Cancer

Sakineh Amoueian, Armin Attaranzadeh, Mahdi Montazer, Arash Akhavan Rezayat, Ahmadreza Zarifian, Amir Behforouz, Fatemeh Sobhani

Abstract

Introduction: Gastric cancer is a leading cause of cancer-related mortality with poor treatment outcome. The HER2/neu gene has been identified as a potential candidate for targeted therapy. The aim of our study was to assess the relation between chromogenic in situ hybridization (CISH) and immunohistochemistry (IHC) methods to determine the best way for gastric cancer diagnosis.

Methods: During a historical cohort study, 50 gastric cancer samples were analyzed by CISH and IHC. The relation between HER2neu status and various clinical-pathological parameters was also analyzed. Alive patients were followed from 2009 through 2012 for the main outcomes (life/death). The results of these two methods, in terms of sex, age, tumor size, grading, staging, tumor location, metaplasia, presence of necrosis and ulceration, vascular invasion, the TNM system, mucin and signet and patient survival rates were compared together.

Results: IHC and CISH were compared together in different aspects (Gender, Size and age, Grade and stage, Location and metaplasia, Ulcer and necrosis, Signet and mucin, Invasion, Survival analysis) and there was not any significant difference between them by IHC and CISH techniques (P<0.05). Comparison TNM score by these two methods showed that there is not any significant relationship between IHC and different N staging (P>0.05). But between CISH and different N staging, there was a statistically significant difference (P<0.05).
**Abstracts**

**Conclusion:** In comparison between IHC and CISH there was only significant relationship between CISH and different N staging (P<0.05) and low amplified CISH was more capable to gastric cancer diagnosis, compared to low expression in IHC.

**Keywords:** Gastric Cancer, Immunohistochemistry, Chromogenic in situ hybridization, erbB-2, Her2/neu

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Fruit, Vegetable and Antioxidant Vitamin (Vitamin E, C and β-carotene) Intake and Prevention of Gastric Cancer: a Systematic Review

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**Abstract**

**Background and Objective:** Oxidative stress can cause cancer. Our aim was to establish whether antioxidant supplements reduce the incidence of gastric cancer. It is an important issue because although the global incidence of gastric cancer has been decreased dramatically in recent decades, it is the most common cancer in north and northwest Iran.

**Methods:** Current data were obtained from electronic databases (PubMed and Google Scholar sites; until January 2016). In this study, 25 relevant articles were reviewed systematically. This is a valid study, so we have evaluated the role of antioxidant in gastric cancer when it is used through fruit and vegetables, singly and as supplements.

**Results:** We found that higher dietary intake of vitamin C, vitamin E and β-carotene was inversely associated with gastric cancer risk (for vitamin C, pooled OR=0.58, 95% CI 0.50-0.65; for vitamin E, pooled OR=0.65, 95% CI 0.57-0.74; for β-carotene, pooled OR=0.59, 95% CI 0.49-0.70). Subgroup analyses suggested the effects of these antioxidant vitamins were different in gastric cancer subtypes. While no such association was observed for blood levels of these antioxidant vitamins. No single antioxidant can replace the combination of natural phytochemicals in fruits and vegetables and achieve their health benefits. The evidence suggests that antioxidants are best acquired through whole food consumption, not from expensive dietary supplements.

**Conclusion:** Fruit and vegetables and their antioxidant contents have protective effects against gastric cancer but single antioxidant vitamin and dietary antioxidant supplements may not have substantial benefits to gastric cancer, thus the results should be interpreted cautiously.

**Keywords:** Gastric Cancer, Antioxidant, Fruit, Vegetables, Vitamin, Supplement

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**Hot Beverages and Oesophageal Cancer**

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**Abstract**

Introduction: The possibility of an association between the consumption of hot beverages and oesophageal cancer (OC), has long been suspected, presenting a potentially modifiable risk factor. Hot beverages (tea and coffee) may cause OC by damaging the walls of the oesophagus due to their high temperatures. In this regard, we can deduce that the risk of OC, as a result of oesophageal injury, may be increased in populations in which these drinks are commonly consumed. Numerous studies have investigated the association of the quantity/temperature of these drinks with the risk of OC. The objectives of this work are to review the literature, report the results and compare different risk regions. We conducted an analysis of these studies to summarize the evidence and clarify the association between hot beverages and foods consumption and OC risk.

**Methodology:** By searching PubMed and Google Scholar, we found several eligible studies. From these studies we selected 18 based on geographical regions (Europe, South America, Middle East, East Asia and East Africa). These regions included both high-risk and low-risk areas.

**Results:** For coffee and tea, there was little evidence of an association between the quantity consumed and OC risk. However, the majority of studies showed an increased risk of OC associated with higher drinking temperature. Overall, the available results strongly suggest that drinking high-temperature beverages increases the risk of OC; both high-risk and low-risk areas. Consumption of hot beverage was significantly associated with OC risk, with an odds ratio (OR) of 1.82 (95% confidence interval [CI] = 1.53-2.17). Subgroup analyses suggests that the association between hot beverage and OC risk were significant in Asian (OR: 2.06; 95% CI: 1.62-2.61) and South American populations (OR:1.52; 95% CI:1.25-1.85), but not significant in the European population (OR: 0.95; 95% CI: 0.68-1.34). This association to geographical regions indicates the importance in changing people’s dietary habits to prevent OC.

**Research Significance:** Regular consumption of tea and coffee is unlikely to affect your risk of cancer. It is, however, recommended that you avoid drinking scalding hot water-based beverages.

**Keywords:** Tea, Coffee, Temperature, Review, Oesophageal Cancer, Hot Drinking

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**Blood Group Types and Pancreatic Cancer**

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**Abstract**

**Introduction:** Pancreatic cancer is one of the most common diseases which causes more than 200000 people death in the world every year. It is the third fatal cancer in Iran. Risk for pancreatic cancer has been associated with environmental and congenital factors.

**Objective:** This study is an overview to determine the connection between blood group types and risk of pancreatic cancer .

**Methods:** This study that tries to find out relative between blood group types and pancreatic cancer is done by searching articles from 2010 to 2015 in Google scholar, pubmed and etc. and also to summarize the evidence and clarify the association between hot beverages and foods consumption and OC risk.

**Conclusion:** More studies have shown that Blood type was a risk
factor for pancreatic cancer. people with non-o blood group are at higher risk rather than people with o group type.

Keywords: Pancreatic Cancer, Blood Group Types

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Hepatic Arterial System Anomalies Encountered During Pancreatoduodenectomy-Management Approach at Specialist Hepatobiliary Oncologic Center.

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Abstract

Introduction: Aberrant hepatic arterial anatomy poses a challenge for surgeon during pancreatectoduodenectomy (PD). Anomalies are best identified on preoperative imaging to avoid inadvertent injury to the aberrant vasculature during dissection. Damage to unrecognized vascular anomalies may result in liver ischaemia or biliary-enteric anastomotic failure. We present our experience of dealing with aberrant hepatic vessels during PD.

Methods: Patients with aberrant hepatic vasculature who underwent PD between December 2014 and February 2016 were included. We used artery first technique for dissection in cases identified on preoperative imaging. Aberrations were classified according to Hiatt classification (Hiatt Jr et al. Ann Surg 1994;220(1):50–2).

Results: Between December 2014 to February 2016, 35 PD were performed with aberrant arterial anatomy in 13 (37%) cases (table 1). These vessels were recognized and preserved in 12 cases. In one patient, the replaced right hepatic artery (RHA) arising from SMA was coursing through pancreatic parenchyma needing resection and reconstruction with uneventful postoperative recovery.

Conclusion: Aberrant hepatic arterial anomalies are common and should ideally be picked up by preoperative imaging. It is possible to preserve these vessels in most cases with careful surgical dissection using artery first technique. Surgeons performing pancreatoduodenectomy should be well versed with the aberrant vascular anatomy to minimize any inadvertent damage.

Keywords: Arterial Anomalies, Pancreatoduodenectomy, Replaced Right Hepatic Artery, Artery First Dissection

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Lumpectomy and Mastectomy Advantages and Disadvantages

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Abstract

Background and Objective: Some doctors make treatment recommendations based on what they think a patient wants without asking the patient. For example, some doctors may think that a 60-year-old woman will care less about losing her breast than a 40-year-old, but we believe that Your breast cancer care should not be based on what other patients want. It should be based on what matters to you. The key is to be informed and this exactly is our purpose to be informed appropriately. It is hoped that this information may be useful in assisting women to make individual choices that uniquely suit their physical, psychosocial, and functional needs.

Methods: Our data were collected from several credible database like medline, Medscape and google scholar. The study is based on 16 papers that have been studied and in no way it was not our goal to determine which one is better because choosing the appropriate treatment is based primarily on patient.

Result: We found that there is no significant difference in overall survival among women who underwent mastectomy and those who underwent lumpectomy. But have some difference that in some cases return to patient perspective & lifestyle to choose the way he/she wants to cure the cancer. We notice that in mastectomy patient has a better mental state about recurrence of cancer but has a longer convalescing & patient must underwent multiple surgeries for implantation therapy, patient who choose lumpectomy must know that this is less invasive method and lost less breast tissue and has a higher sexual experience. Having 5-7 weeks of radiotherapy & a little more chance of recurrence of the cancer are some disadvantages of BCT.

Conclusion: Lumpectomy followed by breast irradiation continues to be appropriate therapy for women with breast cancer, provided that the margins of resected specimens are free of tumor & an acceptable cosmetic result can be obtained, but in other cases that the margins are not clean & in women who do not care much about keeping their breast and want to have a better mental relaxation state mastectomy can be another choice.

Keywords: Lumpectomy, Mastectomy, Breast Conservative-Therapy (BCT), Radical Mastectomy, Breast Cancer

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Immune Approaches for Treatment of Breast Cancer

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Abstract

Immune approaches for breast cancer treatment are based on innate & adaptive immune system. Immune system is capable of escaping from cancer cells, either by recognizing them as self-cells or by tolerating these cells. In breast cancer, different pathways are identified which have an impact on immune system. Some of these pathways are related to immune system and cancer cell- tumor microenvironment. Several immune approaches are being investigated in breast cancer treatment. Natural killer cells, Killer Natural Cells, dendritic cells, and dendritic cell vaccines are the immune approaches that are being used in breast cancer treatment. In some cases, immune approaches have been combined with other therapies. The other immune approaches that are being investigated are: adoptive transfer of cytotoxic T lymphocyte, adoptive transfer of tumor specific T lymphocyte, adoptive transfer of regulatory T lymphocyte, adoptive transfer of dendritic cell, adoptive transfer of dendritic cell vaccine, adoptive transfer of herpes simplex virus type 1, adoptive transfer of mesenchymal stromal cells. In conclusion, immune approaches are promising for breast cancer treatment.
Abstract

Background: Breast cancer, a systemic disease is the most frequent cancer with second mortality rate in women worldwide. Lack of validated biomarkers for early detection of breast cancer to warrant the diagnosis and effective treatment in early stages has directed to the new therapeutic approach so we review recent Advances have been made in the field of cancer immunotherapy in understanding the role of the host immune response in affecting tumor progression and response to various treatments.

Methods: This literature review discusses the available data regarding to the title, Databases including PubMed and Google Scholar were searched and more than 20 articles were studied for this aim.

Result: Immunotherapy is the most recent therapy that is being to treatment of Breast Cancer that can be categorized as either (a) specific stimulation of the immune system by active immunization, with cancer vaccines, or (b) passive immunization, such as tumor-specific antibodies or adoptive cell therapy that inhibit the function of, or directly kill, tumor cells (immune modulators such as adjuvants to stimulate the immune response and inhibitors of checkpoint blockade to prevent downregulation of activated lymphocytes, to enhance these modalities). There are several compelling reasons why immune-based therapies should be explored in breast cancer. First, breast cancers express multiple putative tumor-associated antigens, such as HER-2 and MUC-1, which have been the successful focus of vaccine development over the past decade, translating into tumor-specific immune responses and, in some cases, clinical benefit. Second, passive immune strategies with anti-HER-2 antibodies, such as trastuzumab and pertuzumab, have led to survival benefits in breast cancer. A number of immunotherapy approaches have been developed to counter the severity of progression and development of breast cancers. Such therapies include: use of therapeutic vaccines such as Nelipepimut-S (Neuvax® E75), GVAX and trastuzumab conjugated to an adjuvant, use of checkpoint inhibitors, adoptive T cell Therapy and genetically engineered monoclonal antibodies designed to target antigens produced by breast tumor cells.

Conclusion: Immunotherapies conventionally have very few side effects and thus can be administered to an individual for much longer periods of time with little or no toxicity. This kind of therapy appears to benefit psychosocial adjustment in cancer patients, over months and even more at 24 months. The MBSR intervention applies method urinary melatonin to detect breast cancer early in nurses who worked over 20 years.

Methods: This study is an overview to detect breast cancer early in nurses who worked over 20 years and has been used several articles on databases such as Google Scholar, PubMed, SID, Scopus and Science Direct.

Conclusion: In most studies, artificial light and shift work were considered as risk factors for breast cancer. Melatonin supposed to anti metastatic hormone which had association in breast cancer. Therefore, measurement of urinary melatonin seems to be useful for shift/night work nurses as high risk people to detect breast cancer early.

Keywords: Breast Cancer, Melatonin, Nurses, Shift/ Night Work, Urinary Melatonin

Quality of Life in Patients with Breast Cancer

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Abstract

Background: Breast cancer is one of the most common cancers in women and includes approximately 23% of all kinds of cancers. A breast cancer diagnosis typically results in dramatic and negative effects on an individual's quality of life. The main reason for evaluation of life quality is to access informations which result in improvement and health status of patients. The diagnosis of breast cancer in women may result in depression, paranoid ideation, hostility, anxiety and unhappiness. Longitudinal studies addressing change in health related quality of life (HRQoL) following a diagnosis of cancer have mainly focused on a single cancer type, and little is known about the differences in HRQoL over time according to the type of tumors.

Method: current data was obtained from electronic database until 2016. We have determined the effectiveness of a mindfulness-based stress-reduction (MBSR) program on quality of life and psychosocial outcomes in women with early-stage breast cancer. Also we have compared the change in health related quality of life (HRQoL) over 2 years following breast cancer or melanoma diagnosis and socio-demographic variables associated with HRQoL over time. Patients recently diagnosed with breast cancer or melanoma completed surveys within 1 month of diagnosis and 6,12 and 24 months later.

Results: Results tended to decline psychosocial problems at 12 months and even more at 24 months. The MBSR intervention appears to benefit psychosocial adjustment in cancer patients, over and above the effects of usual care or a credible control condition.
ABSTRACTS

Cancer patients experienced decreased HRQoL scores following the diagnosis before improving over time. However, the analyses revealed that this rebound effect may occur at diverse times over the course of the illness according to the type of cancer. In addition, HRQoL over time positively associated with age and negatively related to living with a partner regardless of the type of cancer. The results of this study suggest that support in hospital units should be specific and depend on the cancer type.

Conclusion: the diagnosis of breast cancer decreases patient’s health related quality of life and may be followed by psychological problems that make the improvement process harder. So it seems it is important to find ways to improve the quality of life in cancer patients so they can deal with their illness too much easier.

Keywords: Breast Cancer, Health, Quality of Life, Cancer Patients

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Design and Construction a Bi-specific Antibody Targeting Cancer Cells and Angiogenesis in Breast Cancer

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Abstract

Introduction: Angiogenesis is the physiological process through which new blood vessels form of existing vessels and cause the tumor to grow. Tumor stimulates blood vessel growth by secreting various growth factors. Vascular endothelial growth factor (VEGF) has been demonstrated to be a major participant to angiogenesis. VEGF causes a massive signaling cascade in endothelial cells by binding to VEGF receptor-2 (VEGFR2). This cascade stimulates vessel permeability, proliferation, migration and finally differentiation into mature blood vessels. As well, Epithelial cell adhesion molecule (EpCAM) is a glycoprotein located in the basolateral plasma membrane of epithelial cells and it can be used as a cancer specific biomarker to be considered. This molecule is overexpress in the most of the human malignancies with epithelial origin like epithelial carcinomas of colon, breast, ovary and etc. Also EpCAM could increase proliferation, differentiation, migration and aggressiveness in tumor cells through different mechanisms. In this project we have designed a bi-specific antibody that can target VEGFR2 and EpCAM.

Materials and Methods: We designed a bi-specific Ab in which scfv parts of Abs are connected by a linker and the appropriate signal peptide was attached at the beginning of the sequence and proper folding was evaluated through computational modeling. Results: The bi-specific Ab’s folding in terms of energy levels in such a manner that has stable structure and it is ready for expression in the expression host.

Conclusion: Bi-specific Ab that we designed could target the VEGFR2 and EpCAM thereby will be able to decrease angiogenesis, tumor growth, proliferation, migration, metastasis and aggressiveness of tumor cells.

Keywords: VEGFR2, EpCAM, Bi-specific Antibody, Angiogenesis, Breast Cancer

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Obesity and Breast Cancer

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Abstract

Background: breast cancer is the most common malignancy and the leading cause of cancer-related death amongst women worldwide. Many factors are causing this cancer in this article we examine the relationship between obesity and risk of breast cancer.

Materials and Methods: this study is a systematic review of articles published between 2010 and 2015. A systematic process of searching, sorting papers, quality assessment, data extraction and analysis of information from medical databases such as PubMed, Med lib, Scholar google and irandoc was valid and search for keyword: obesity, breast cancer, body mass index and breast tumor were used. 170 articles were analyzed from in this field through which 103 articles related to topic and all of them confirmed the relation between obesity and risk of breast cancer.

Results: In some papers pointed to the impact of obesity on race-specific breast cancer incidence and mortality. Body mass index is associated with gene methylation in estrogen receptor-positive breast tumor and obesity increases the risk of cancer death among postmenopausal women with estrogen receptor-positive(ER+) breast cancer. Also obesity promotes breast cancer by ccl2-mediated macrophage recruitment and angiogenesis. Obesity also induced a leptin-notch signaling axis in breast cancer.

Conclusion: According to study articles can be concluded that obesity is a risk factor for breast cancer.

Keywords: Obesity, Breast Cancer, Body Mass Index, Breast Tumor

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Progression and Metastasis of Breast Carcinoma Through Epithelial-Mesenchymal Transition of Breast Cancer Stem Cells

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Abstract

Breast cancer is a major health issue in women world-wide, since
patients still experience disease recurrence and metastasis. Therefore, it is necessary to combat breast cancer, especially in advanced stages, through elimination of cancer cells with the migration ability. Breast cancer stem cells (BCSCs), also known as breast cancer initiating cells, show the plasticity to transit between mesenchymal-like and epithelial-like states; epithelial-cancer cells allow the tumor to expand into new territory, while the proliferative mesenchymal-cancer cells drive tumor cell growth in the tumor interior. Accordingly, epithelial-mesenchymal transition (EMT) facilitates cancer cell migration through the basal membrane, invasion into adjacent tissues, and penetrating into the blood and/or lymph vessels. In breast cancer, EMT is regulated by the tumor microenvironment composed of endothelial cells, fibroblasts, macrophages, and a variety of other infiltrating immune cells. Recent studies indicated that isolation and characterization of circulating BCSCs, as single cells or multicellular clusters, is possible through detection of cancer cells expressing main EMT regulators such as TGF-β pathway components and the transcription factor FOXC1. In addition, the content of breast cancer cells positive for E-CAM and CD44, surface antigens involved in cell migration, in the primary tumors correlates with increased risk of distant metastasis. Therefore, targeting critical signaling pathways or metastasis mediators holds the potential to eliminate circulating BCSCs.

Keywords: Breast Cancer Stem Cells, Epithelial-Mesenchymal Transition, Metastasis

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**Anti-Cancer Activity of Methanol Extracts of Chicory Intybus on Human Breast Cancer SKBR3 Cell Line**

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**Abstract**

**Background:** Breast cancer is the most prevalent cancer and the second cause of death among women around the world. Fatty acid synthase (FASN) become overexpressed in breast cancer and many other cancer cell lines like: Prostate cancer, Colon carcinoma and etc. Human breast cancer SKBR3 cell line has a more expression of FASN than any other type of breast cancer cell lines. Lipids are essential part of cell membrane and they’re also necessary for cell proliferation. First synthesized lipid is palmitate and the other types of lipids form from it. FASN is the key enzyme for fatty acid synthesis de novo pathway and it is producing palmitate by compound acetyl-coA, malonyl-coA and consuming NADPH. Therefore, FASN inhibition can be an effective way for cancer restriction or even cancer treatment. Although the underlying mechanism is still under studying but several theories have been proposed. For example: fatty acid synthase inhibitors such as methanol extracts of Chicory intybus (Chico) can reduce the amount of fatty acids which are needed for cell membrane formation and this is lead to reduce the cell growth and proliferation rate. An alternative view suggested that malonyl-coA accumulation in the cell prepared the condition for cell apoptosis.

**Objectives:** The aim of the present study is to evaluate cytotoxic effect of methanol extracts of Chicory on human breast cancer SKBR3 cell line.

**Material and Method:** To determine the toxicity of this extract, SKBR3 cells were trypsinized and seeded in 96-well plates at the density of 5x10⁴ cells/well. After 24 hours incubation, cells were treated for 24, 48 and 72 hours with different concentrations of methanol extracts of chicory (200, 300, 400, 500, 600 and 700 µg/ml) and 1% DMSO as a control. Eventually, determination of cell viability was done by MTT assay and using Elisa reader by observing absorbance at 570 and 630 nm wavelengths.

**Result:** Methanol extracts of chicory decrease the viability of human breast cancer SKBR3 cell line. This extract decreases the cell viability of SKBR3 cells in a time, concentration-dependent manner. As the dose of chicory extract and duration of treatment with this extract increased the percentage of cell viability decreased. The results show that IC50 on SKBR3 cells was 800, 400 and 300 after 24, 48 and 72 hours of treatment, respectively. The significance for all concentrations was P<0.001.

**Conclusion:** The result of this study show that methanol extracts of Chicory can have an inhibitory effect on SKBR3 cell growth in vitro so this result emphasize that methanol extracts of Chicory can be a new target for cancer restriction or even cancer treatment.

**Keywords:** Chicory Intybus, Breast Cancer, SKBR3 Cell Line, Fatty Acid Synthase, MTT, Cell Viability

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**Fertility Preservation in Patients with Breast Cancer**

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**Abstract**

**Background:** Breast cancer (BC) is the most frequent cancer in young women of reproductive age and comprises approximately 40% of all female cancers in this age group. 15-25% of patients with breast cancer are premenopausal at the time of diagnosis. preferably, it is necessary to combat breast cancer, especially in advanced stages, through elimination of cancer cells with the migration ability. Breast cancer stem cells (BCSCs), also known as breast cancer initiating cells, show the plasticity to transit between mesenchymal-like and epithelial-like states; epithelial-cancer cells allow the tumor to expand into new territory, while the proliferative mesenchymal-cancer cells drive tumor cell growth in the tumor interior. Accordingly, epithelial-mesenchymal transition (EMT) facilitates cancer cell migration through the basal membrane, invasion into adjacent tissues, and penetrating into the blood and/or lymph vessels. In breast cancer, EMT is regulated by the tumor microenvironment composed of endothelial cells, fibroblasts, macrophages, and a variety of other infiltrating immune cells. Recent studies indicated that isolation and characterization of circulating BCSCs, as single cells or multicellular clusters, is possible through detection of cancer cells expressing main EMT regulators such as TGF-β pathway components and the transcription factor FOXC1. In addition, the content of breast cancer cells positive for E-CAM and CD44, surface antigens involved in cell migration, in the primary tumors correlates with increased risk of distant metastasis. Therefore, targeting critical signaling pathways or metastasis mediators holds the potential to eliminate circulating BCSCs.

**Objectives:** The aim of the present study is to evaluate cytotoxic effect of methanol extracts of Chicory on human breast cancer SKBR3 cell line.

**Material and Method:** To determine the toxicity of this extract, SKBR3 cells were trypsinized and seeded in 96-well plates at the density of 5x10⁴ cells/well. After 24 hours incubation, cells were treated for 24, 48 and 72 hours with different concentrations of methanol extracts of chicory (200, 300, 400, 500, 600 and 700 µg/ml) and 1% DMSO as a control. Eventually, determination of cell viability was done by MTT assay and using Elisa reader by observing absorbance at 570 and 630 nm wavelengths.

**Result:** Methanol extracts of chicory decrease the viability of human breast cancer SKBR3 cell line. This extract decreases the cell viability of SKBR3 cells in a time, concentration-dependent manner. As the dose of chicory extract and duration of treatment with this extract increased the percentage of cell viability decreased. The results show that IC50 on SKBR3 cells was 800, 400 and 300 after 24, 48 and 72 hours of treatment, respectively. The significance for all concentrations was P<0.001.

**Conclusion:** The result of this study show that methanol extracts of Chicory can have an inhibitory effect on SKBR3 cell growth in vitro so this result emphasize that methanol extracts of Chicory can be a new target for cancer restriction or even cancer treatment.

**Keywords:** Chicory Intybus, Breast Cancer, SKBR3 Cell Line, Fatty Acid Synthase, MTT, Cell Viability
chemotherapy are considered experimental methods. These methods have both potential advantages and disadvantages.

**Conclusion:** Oncofertility counseling may be a key moment in the decision-making process of young patients who are interested in future fertility.

Still, as there are no official guidelines, many oncologists lack the required knowledge and mind-set to advise young breast cancer patients on fertility issues.

**Keywords:** Breast Cancer, Oncofertility, Fertility Preservation

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**The Most Common Paraneoplastic Syndrome in Women Aged 20 – 40 with Breast Cancer**

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**Abstract**

Breast cancer is the most common cancer in women. In the 60 past years its incidence increases between 1-4% in a year. The special characteristic of the breast cancer is that this cancer is treatable therefore prevention of breast cancer is an effective way to control it. One of the diagnostic ways of this cancer is become aware of Paraneoplastic syndrome that is along with most of cancers. Paraneoplastic syndrome is a set of signs and symptoms that caused by or resulting from the presence of cancer in the body but not the physical presence of cancerous tissue in the part or affected organ. This article sought to study the most common Paraneoplastic syndrome with breast cancer in patients aged 20-40 in Razavi Mehr center in Mashhad, Iran.

**Keywords:** Breast Cancer, Paraneoplastic Syndrome, Iran

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**Evaluation of Frequency of Chemotherapy Induced Anemia in Breast Cancer Patients**

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**Abstract**

Introduction: Anemia is a common complication of chemotherapy, which reduce quality of life. Breast cancer is the most common malignancy in women which may lead to anemia due to various causes. The aim of this study is evaluation the frequency of adjuvant chemotherapy induced anemia in women with non-metastatic breast cancer.

**Method:** In this cross-sectional study 144 women with non-metastatic breast cancer referred to radiotherapy and oncology department of Imamreza Hospital Mashhad, Iran. Patient’s documented findings were recorded in the questionnaires and finally, data were analyzed by SPSS 16.0 software.

**Findings:** In this study, 41% of patients were anemic before the treatment and 43.1% of patients became anemic during and after treatment. 24.7% of patients were not anemic before the treatment and became anemic after the treatment (P<0.001). The prevalence of anemia after treatment was significantly higher in advanced stages of diseases (P=0.01). The chance of developing anemia were more in patients who undergone 6 courses and AC-Taxol regimen, but there was no significant relationship between the prevalence of the number of courses, use of G-CSF, co-morbidity, menstrual status and BMI. There was no significant relationship between the prevalence of chemotherapy-induced anemia and none of our study’s variables in patients who were not anemic before the treatment.

**Conclusion:** Due to prevalence of chemotherapy-induced anemia and its effects on yield and quality of life, even mild degrees of anemia should be evaluated before treatment. Also considering medical interventions is necessary if it’s needed and hemoglobin levels should be frequently monitored during treatment.

**Keywords:** Breast Cancer, Chemotherapy, Anemia

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**Characteristics of chemotherapy-induced anemia in patients with breast cancer**

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**Abstract**

Introduction: Breast cancer is the second most common malignancy in women, worldwide. Several etiologic factors may cause anemia in a patient with breast cancer. Anemia is a prevalent complication in patients with breast cancer who undergo chemotherapy. It affects the health status and quality of life in these patients. The aim of this study was to evaluate the frequency of adjuvant chemotherapy-induced anemia in women with non-metastatic breast cancer.

**Method:** 100 women with non-metastatic breast cancer who were referred to oncology department of Imam Reza hospital were assessed two times, before and after the chemotherapy, for anemia. The chemotherapy regimen was either doxorubicin and cyclophosphamide or cyclophosphamide, metotrexate and 5-FU. Data were collected by blood sampling and a simple questionnaire and analyzed by SPSS software (version 11.5).

**Finding:** In this study, 56.9% of patients had normal hemoglobin concentration, while 39.6% and 3.5% of patients were in grade I and II anemia, respectively, before the treatment. About 20% of patients who had normal hemoglobin concentrations developed grade I anemia during the treatment course. Mean hemoglobin concentration was significantly lower after the chemotherapy (12.19 g/dL),
ABSTRACTS

compared with pre-treatment state (12.43 g/dl) (P=0.01). There was a significant relationship between the prevalence of chemotherapy-induced anemia and the number of courses (P<0.05).

Conclusion: Anemia, in any grade, should be evaluated before treatment in patients who undergo chemotherapy courses, because of the high prevalence of chemotherapy-induced anemia and its complications. Hemoglobin levels should also be frequently monitored during treatment and in cases of severe anemia medical interventions are necessary.

Keywords: Breast Cancer, Chemotherapy-Induced Anemia, Chemotherapy

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Most Common Causes of First Patients Referral to Diagnose Breast Cancer in Rural and Urban Women

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Abstract

Increasing cancer rate especially breast cancer in our society is an emerging crisis. Breast cancer is the most common cancer among females in the world. Find a way that could help faster diagnosis is needed because early detection in breast cancer can improve patients' chances of survival. We study the most common causes that make patients refer to an oncologist. This article make the women especially rural women aware of the easy ways that they can diagnose their cancer earlier and threaten it.

We evaluated 200 Rural and 200 urban patients cases faces breast cancer and categorize their first causes of referral into 6 groups including: find lump in their breast or in their armpits, change breast shape, pain, screening, periodic checkup, others and then Compare the urban data and rural data.

Keywords: Breast Cancer, Diagnosis, Referral, Rural-Urban

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The Influence of Epigenetic on Breast Cancer Risk Induced by Physical Activity

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Abstract

Physical activity can influence genetic susceptibility through epigenetic mechanisms and is associated with reduced risk of breast cancer and mortality. In this systematic review, we investigated the epigenetic processes, induced by physical activity, implicated in breast cancer risk.


Results: Regular exercise is significantly useful in the prevention of postmenopausal breast cancer. In this respect, estrogen may induce promoter hypermethylation of tumor suppressor genes like RASSF1A and APC genes. Physical exercise also decreases estradiol and diethylstilbestrol, the inducers of promoter hypermethylation of tumor suppressor genes such as E-cadherin and p16.

In addition, it has been shown that after exercise, methylation of L3MBTL1, a tumor suppressor gene, is reduced and associated with overall survival. Physical exercise also improves expression of p53 and FGFR2 through epigenetics. Furthermore, histone patterns can be influenced by moderate lysine acetylation, and arginine methylation in breast cancer. Finally, interactions between nutrients and the genome as well as energy balance, have been shown in a high level of physical activity which implicates nutritional regulation of gene expression.

Conclusion: Physical activity may be able to protect against breast cancer by some mechanisms. The epigenetic regulation should be considered in diagnosis, prognosis, metastasis and therapy in breast cancer. DNA methylation may be a potential target for therapy especially in Estrogen receptors-(ERa) negative breast cancer, where it can be induced by epigenetic mechanisms.

Keywords: Physical Activity, Epigenetic, Breast Cancer

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Exploring the Relationships Among Spiritual Health with Quality of Life in Woman with Breast Cancer

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Abstract

Objectives: Most of the commonly used quality of life (QOL) instruments in women with breast cancer do not include spirituality as a core domain. However, previous research suggests that spirituality might be an important aspect of QOL for cancer patients and that it may, in fact, be especially salient in the context of life-threatening illness.

Method: This study is a reviewed article that is provided by internet resources and books.

Results: These studies show that spiritual beliefs typically play a positive role in adjustment and greater health. In a review of over 200 studies, positive relationships were documented between religious commitment and physical and functional status, reduced extent of psychopathology, greater emotional well-being, improved coping, and strengthened social support. Spiritual Health has been associated with several indicators of well-being, including self-esteem, assertiveness, and purpose in life. Additionally, higher spiritual health in cancer patients has been shown to correspond with lower levels of anxiety and higher life satisfaction quality of life. Many advanced cancer patients’ spiritual needs are not supported by religious communities or the medical system, and spiritual support is associated with better QOL.

Conclusion: Women with breast cancer with many challenges, not the least of which is facing the existential dilemmas of pain, suffering, and possible death. All resources, including spiritual resources, that encourage healing, adjustment, and a better quality of life. Research demonstrates an association between spiritual health and improved coping and quality of life.

Keywords: Spiritual Health, Quality of Life, Woman with Breast Cancer

Breast Cancer and Hepatitis C; an Overview

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Abstract

Background and Review of the literature: Hepatitis C virus is a major cause of chronic liver disease, frequently progressing to cirrhosis which is itself a risk factor for hepatocellular carcinoma (HCC) and non-Hodgkin B-cell lymphoma. Considering the prevalence of both breast cancer and HCV infection, each year, thousands of women are likely to be affected by both. Some studies suggest that chronic HCV infection is associated with early-onset breast cancer (non-Hodgkin lymphoma). Data have also shown that patients with PBC (Primary biliary cirrhosis) may have an increased risk of breast cancer and extra hepatic malignancies when compared with the general population. It is believed that HCV may cause chromosomal instability. The HCV-associated HCC may also have mutations in the tumor suppressor p53, the proto-oncogene β-catenin and several other genes. There is however controversy between studies about association of hepatitis C and breast cancer. Bruno et al. reported that HCV infection most likely plays an important role in the development of hepatocellular carcinoma as well as breast cancer. In contrast, the results of a case-control study conducted by Larrey et al., suggest that chronic HCV infection is not a strong predictor of breast carcinoma in adult females of any age. However, the mechanism of its oncogenesis remains unclear.

Conclusion: The high anti-HCV antibodies prevalence in elderly breast cancer and extra hepatic malignancies when compared with PBC (Primary biliary cirrhosis) may have an increased risk of cancer (non-Hodgkin lymphoma). Data have also shown that patients of women are likely to be affected by both. Some studies suggest that chronic HCV infection is associated with early-onset breast cancer (non-Hodgkin lymphoma). Data have also shown that patients with PBC (Primary biliary cirrhosis) may have an increased risk of breast cancer and extra hepatic malignancies when compared with the general population. It is believed that HCV may cause chromosomal instability. The HCV-associated HCC may also have mutations in the tumor suppressor p53, the proto-oncogene β-catenin and several other genes. There is however controversy between studies about association of hepatitis C and breast cancer. Bruno et al. reported that HCV infection most likely plays an important role in the development of hepatocellular carcinoma as well as breast cancer. In contrast, the results of a case-control study conducted by Larrey et al., suggest that chronic HCV infection is not a strong predictor of breast carcinoma in adult females of any age. However, the mechanism of its oncogenesis remains unclear.

Keywords: Hepatitis C Virus, Breast Cancer, Risk Factor

Cancer-Testis Antigens and Breast Cancer Immunotherapy

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Abstract

Context: Breast cancer is the most commonly diagnosed type of cancer among women and the second most common cause of cancer death in women. Tumors aberrantly overexpress various genes such as cancer-testis antigens (CTAs). CTAs belong to a class of proteins which are expressed in germ cells, predominantly in the male testis.

Evidence Acquisition: CTAs exhibit aberrant expression in cancer cells and contribute to tumorigenesis. Owing to their restricted expression profile and immunogenicity in cancer patients, CTAs are clinically referred to as the most promising tumor associated antigens. Also, CTAs have emerged as a potential targets for developing novel clinical biomarkers and immunotherapy for various malignancies. In addition, there is some evidence that these genes can be targeted for early detection.

Results: Whether CTAs have roles in supporting tumorigenic features is less studied. Recent evidence now indicates that these proteins can be employed by the tumor cell regulatory environment to support cell-autonomous behaviors. Furthermore, several clinical trials have evaluated their possible application in different cancers. Two members of this family, including MAGE A3 and NY ESO I have been placed by the National Cancer Institute in the top ten categories of the Project for the Prioritization of Cancer Antigens.

Conclusions: Thus, the targeting of tumorigenic CTAs is considered...
Evaluation of Anti-Cancer Effect of Camellia Sinensis Hydroalcoholic Extract on Human Cervical Carcinoma Epithelial Cell Line

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Abstract

Background and Aims: Cervix cancer is the second most common cancer in women. The cathechins in green tea is a powerful antioxidant and inhibits the growth of cancer cells. The current study was designed to evaluate the anticancer effect of this herb on cervix cancer cell lines.

Methods: In this experimental study, the proliferated and cultured HeLa cells (human cervical epithelial-derived tissue) were used to determine the anticancer effect of harmala seed extract. The cells exposed to different doses of harmala seed extract (25, 50.5 and 100 µg/ml) and were incubated for 24, 48 and 72 hours. After the incubation period, modified colorimetric MTT ([3-(4,5-dimethyl 2-thiazolyl)-2,5-diphenyl Tetrazolium Bromide) method was used to determine cytotoxicity. After collecting data, statistical analysis was performed using analysis of variance (ANOVA).

Results: The results of MTT assay showed that the HeLa extract anticancer effect is dependent on time and dose. The highest percentage of cell death was observed after 72 h incubation and increase in extract concentration (P<0.001). The 50% growth inhibitory concentration (IC50) of harmala in 24 h was 12.5 micrograms per milliliter.

Conclusion: Camellia Sinensis extract could have dose and time dependent for preventing growth on HeLa cancer cell line. It seems to come with further research, and utilizes its compound in cancer treatment.

Keywords: Hydroalcoholic Extract, Camellia Sinensis, HeLa Cell Line Cancer

Cross-Talk Between MUC1 and Epidermal Growth Factor Receptor-2 (EGFR-2) in Breast Cancer Cells

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Abstract

Introduction: Breast cancer is the most common cancer among women in the world. The proto-oncogene HER2 (EGFR-2) encodes a protein tyrosine kinase (p85HER2) that is homologous to the human epidermal growth factor receptor. Amplification and/or overexpression of HER2 is associated with multiple human malignancies and appears to be integrally involved in the progression of 25-30% of human breast and ovarian cancers. MUC1 is the member of human mucin family and a pass transmembrane protein that plays an important role in cellular signaling. MUC1 is aberrantly overexpressed in human breast cancer and other cancers that associates with HER2 at the surface of breast cancer cells. Studies demonstrated Silencing MUC1-C suppresses HER2 activation. In this study, we measured expression of HER2 receptor in SKBR3 cells that were treated with anti MUC1-CD3 antibody, which previously was produced in our lab.

Materials and Methods: The SKBR3 cell lines were cultured in DMEM with 10% FBS for 24 hours. Afterward the cells were treated with anti MUC1-CD3 antibody. Then, RNA was extracted and CDNA were synthesized. The primers were designed and synthesized and then the expression alteration was investigated and compared with a control group using Real time-PCR techniques.

Result: HER2 receptor expression in SKBR3 cells, which treated with anti MUC1-CD3 antibody was reduced compared to the control samples.

Conclusion: These findings indicate that MUC1-C contributes to constitutive activation of the HER2 pathway and targeting the MUC-C oncoprotein down regulates HER2 activation in breast cancer cells.

Keywords: MUC1, HER2, Real Time, Breast Cancer
**Abstracts**

**Audit of Pelvic Lymph Node Dissection for Endometrial Carcinoma**

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**Abstract**

Introduction: Pelvic lymph node metastasis associated with endometrial cancer carry a poor prognosis. However, routine lymphadenectomy has not conclusively been shown in prospective randomized studies to improve survival in endometrial cancer. We aim to analyze patients undergoing pelvic lymph node dissection for endometrial cancer at our institution.

Methods: All patients with endometrial cancer who underwent pelvic lymph node dissection in the last five years & two & half month were included in the study. Clinical and demographic features were looked at. Data was analyzed using SPSS V 20.0. Association of various factors in their ability to predict positive lymph nodes was looked at.

Results: Between January 2010 to March 2016, a total of 23 patients with endometrial cancer underwent pelvic lymph node dissection. The median operative time was not statistically different for surgery with or without pelvic lymphadenectomy. The indication of lymph node dissection was enlarged lymph nodes found on imaging in 10/23 patients compared to myometrial involvement of >50% on imaging in 13/23 patients. A median of 5 lymph nodes were retrieved. Only 2 of the 23 patients showed positive lymph nodes. There was no significant association between positive lymph nodes and enlarged nodes on imaging or myometrial invasion on imaging or pathology.

Conclusion: Pelvic lymph node dissection can be performed without a significant increase in operative time. There were no clinical or pathological factors identified to predict positive lymph nodes in our study; however the numbers are too small to draw any meaningful conclusions.

Keywords: Endometrial Cancer, Pelvic Lymph Node Dissection

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**The Importance of Social Support in Ovarian Cancer**

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**Abstract**

Ovarian cancer has been defined as the silent killer and the majority of women suffer from this disease don’t show obvious symptoms for long time. It accompany with anxiety, depression, changes in self-confidence, worries about family members, communicating with others and making decisions about screening for cancer and risk reducing oophorectomy. Many women are in late stages of disease at the time of diagnosis and are undergone aggressive operation and medical protocols for treatment. Anxiety and depression are usually common after chemotherapy. During the treatment, pain and inconvenience usually distinguish by psychiatric aware of oncology psychiatry. Severe concern of recurrence, sexuality dysfunction, and identity disorder were experienced by survivors. Thus, it is necessary to understand the factors associated with psychological anxiety and depression in order to help these patients. In fact, the diagnosis of ovarian cancer had a great impact on family. The marital communication may be disturbed because husbands adopted new responsibilities to support their wives. Also physical changes during treatment can be created sexuality disturbance and discomfort. On the other hand, women are worried about increasing risk of ovarian cancer in female children. Social support is important during stressful situation including cancer diagnosis and following surgical operation and chemotherapy. Women defined support from various sources. The most important support is emotional and practical support from family member. In addition, some women found support from friends in society and personal relationship. Thus, social support as a psychological resource in improvement can be related to positive health outcomes and especially helpful during treatment phase.

Keywords: Cancer

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**Anxiety and Depression in Patients Suffer From Ovarian Cancer**

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**Abstract**

Ovarian cancer is the most lethal of malignancies in women. During stages of diagnosis, treatment and survival could be seen a range of physical and psychological symptoms and thus high levels of agitation are experienced. In fact, several psychological symptoms accompany with diagnosis of cancer and during the treatment. Women suffer from ovarian cancer often are at a high level of depression and anxiety risk. The major cause of depression and anxiety during the treatment are multiple physiological stressors of surgical menopause, steroid therapy, and pain. Furthermore, adverse effects of stress and distress such as anxiety, dysphoria and anger on the immune response in cancer have been well documented. In the other words, cancer intensively alters woman’s lives. It can be disturbed usual activities, ability to work. Also it creates financial concerns because of suspicion about future health needs and employment. Therefore, women suffer from ovarian cancer described main changes in their living and cancer affects on their families including changing roles and concerns for husbands, altered sexuality and worries about children that these factors can be the cause of anxiety and depression in these patients.

Keywords: Ovarian Cancer

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**Conclusion**

The research found that by using of niosome nanoparticles can be provided a suitable formulation of paclitaxel drug. Therefore, the results show the efficiency of niosonosome paclitaxel is more than free drug. This decreases used dose and therefore the damage of other tissues.

Keywords: Niosonosome, Paclitaxel, Ovarian Cancer, Iran

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A Novel Approach for the Prediction Ovarian Cancer Recurrence Risk based on the Data Mining Techniques

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Abstract

Despite the advances in the modern surgery techniques and the variety of new chemotherapy regimens, survival of patients with the ovarian cancer does not have improved. The lack of a system to predict the likelihood of recurrence of this cancer can be felt. Predicting the likelihood of cancer recurrence helps to plan the controlling of this disease. In previous methods, important factors have been identified that effect on the recurrence of this disease including types of surgeries and rates of chemotherapy response. But factors such as the histology of tumor, the tumor marker 125-CA and the patient performance status are not considered as the prognostic factors. We introduce an algorithm based on data mining technique using these parameters to predict the risk of cancer recurrence. Our method can suggest treatments that reduce the morbidity and unnecessary surgical procedures. The aim of this study is providing an algorithm to predict the risk of cancer recurrence in the patients with ovarian cancer through serial follow-up after surgery and chemotherapy. This study was performed based on the collected data from the patients with the ovarian cancer in the department of gynecology oncology of Ghaem Hospital, Mashhad University of Medical Sciences from 2011-2015.

Keywords: Ovarian Cancer, Cancer Recurrence, Tumor Histology, Tumor Markers 125-CA, Patient Performance Status, Algorithm, Prediction, Data Mining Technique.

Multidisciplinary Management in Prostate Cancer

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Abstract

Prostate cancer is the most common non-skin malignancy affecting men. Confusing the management of low-risk prostate cancer is the fact that there are basically no data to suggest that definitive treatment impacts prostate cancer-specific survival when compared with active surveillance, an approach which entails the use of PSA levels, digital rectal examinations, and periodic prostate biopsies to monitor for progression of disease and to implement curative therapy if and when such progression occurs. Therefore, when compared with contemporary conservative management approaches, the impact of definitive therapy in patients with low-risk disease is unknown. The multitude of treatment options available to patients with prostate cancer, particularly those with low-risk disease, is substantial. Multidisciplinary clinics offer an appealing approach to the management of patients with prostate cancer by providing patients the opportunity to meet with prostate cancer specialists spanning multiple specialties during a single consultation or visit. Such a model of cancer care affords patients the opportunity to learn about all management options simultaneously and to discuss the recommendations of their treating physicians in an open and interactive fashion, thus allowing for shared decision-making and a potential reduction in physician bias. However, relatively few studies have investigated the other added value that multidisciplinary clinics provide to the patient or health care system, and therefore,
ABSTRACTS

Prostate Cancer Antigen 3 Gene Expression in Prostate Cancer and Benign Prostatic Hyperplasia Patients

Heman Moradi-Sardareh,* and Mahshid Salehbad

Introduction: Prostate cancer (PCa) has increased in the past few years in Iran. PCa diagnosis is currently based on abnormal PSA test but its usage has some limitations such as low specificity. Prostate cancer antigen 3 (PCA3) gene expresses exclusively in prostate tissue and expresses significantly in more than 95% of primary and metastatic PCa. The aim of this study was to assess the expression of PCA3 in urine and blood simultaneously and to compare the results in the same conditions.

Materials and Methods: A total number of 48 patients [24 with biopsy proven prostate cancer (PCa) and 24 with benign prostatic hyperplasia (BPH)] were studied. Twenty-four healthy individuals were also recruited as control group. After blood and urine sampling, total RNA was extracted and cDNA was synthesized. Expression of PCA3 gene was assessed by quantitative reverse transcription polymerase chain reaction.

Results: Comparison of PCA3 gene expression between control and BPH groups indicated no statistically significant differences in both urine and blood samples. Patients with PCa demonstrated an increased PCA3 gene expression rate compared to control and BPH groups (10.64 and 7.17 folds, respectively). The rate of fold increased PCA3 gene expression in urine was 20.90, 20.90, and 20.35 in patients with PCa, BPH, and normal subjects, respectively.

Conclusion: Evaluation of PCA3 gene expression can be considered as a reliable marker for detection of PCa, in addition to better detection, using this test may prevent invasive diagnostic procedures such as prostate biopsy. Increased level of this marker in urine sediment is more sensitive than blood for distinguishing between cancerous and non-cancerous groups.

Keywords: Prostate Cancer, Prostate Cancer Antigen 3, Diagnosis, Tumor Markers, Gene Expression

Options for Perineal Defect Closure Following Extralevator Abdominoperineal Excision in Resource-Limited Setting

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Abstract

Introduction: Extralevator abdominoperineal excision (ELAPE) has evolved in the last decade as an oncologically acceptable surgical procedure in the management of low rectal cancer. Management of the perineal defect resulting from wider resection at the level of levator muscle remains a challenge for the surgeon. This is especially true in developing countries where available resources do not allow for expensive biological mesh or a flap closure of these defects. We report our institutional experience in management of the perineal wound defect following ELAPE at a specialist cancer hospital.

Methods: All cases that underwent ELAPE between October 2014 and Feb 2016 were included. Clinical details, operative data and postoperative outcomes were retrieved from electronic case records. Methodology for management of the perineal defect was recorded in each case.

Results: A total of 47 patients underwent ELAPE during the study period. The mean age was 44 years. Median distance from anal verge was 2 cm with median length of tumor segment of 6 cm. There were 35 male and 12 female patients. There were 4 patients with T2 tumors, 36 patients with T3 tumors and 7 patients with T4 tumors on preoperative MRI scans. Enlarged lymph nodes were present in 41 patients.

Median duration of surgery was 335 minutes. Median blood loss was 75 ml. The perineal defect was closed in 42 patients using omentopexy. Mesh was used in 26 patients. Dual mesh was used in one patient, while in the remaining patients polypropylene or composite mesh containing polypropylene were used. Perineal wound healed well in 30 patients while 12 patients required wound opening and care with dressing. Re-exploration of perineal wound was required in 2 patients. Median hospital stay was 6 days.

Conclusion: Omentopexy can be safely performed with overlying placement of synthetic mesh for closure of perineal defect in ELAPE. This avoids the use of expensive biological mesh or plastic surgery for closure of defect.

Keywords: Perineal Defect, Extralevator AbdominoPerineal Excision, Low Rectal Cancer

Outcomes of Posterior Pelvic Exenteration at a Specialist Oncological Centre

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Abstract

Introduction: Posterior pelvic exenteration provides an option for optimal local control for patients with locally advanced or recurrent gynecologic or rectal malignancies. The morbidity and mortality of this radical operation has improved with evolution of surgical techniques and perioperative care. We report our experience of posterior pelvic exenteration at a specialist cancer hospital.

Methods: All patients undergoing posterior pelvic exenteration between 2002 and 2014 were studied. Clinical details, operative, postoperative and follow-up data were recorded from electronic case records and analyzed using IBM SPSS Ver 20.

Results: Over the 12 year period of study, we identified 28 female patients who underwent posterior pelvic exenteration. The median
age was 50 years (IQR 40 – 54 years). Primary tumor was Ovarian in 23 patients, rectal in 3 patients and uterine in 2 patients. Exenteration was performed for recurrent disease in 23 patients. Median operative time was 270 minutes (IQR 222 – 302 minutes). Three patients developed postoperative complications (Anastomotic leak, Pulmonary Embolism, Ureteric injury in one patient each). Median hospital stay was 7 days. Over a median follow-up duration of 21 months (IQR 9.8 – 33 months), 12 patients were disease free, 6 were alive with recurrence, and 4 had died of recurrent disease while 2 patients died from other causes.

Conclusions: Posterior pelvic exenteration can help in achieving local control in locally advanced or recurrent rectal or gynecologic cancers. A multidisciplinary team approach to management of these aggressive tumors is required for optimal disease control.

Keywords: Posterior Pelvic Exenteration, Locally Advanced, Pelvic malignancy, Gynecological Cancers

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**Classification and Management of Renal Tumors involving the Inferior Vena Cava - Experience from a Specialist Cancer Hospital**

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**Abstract**

**Introduction:** Inferior vena cava (IVC) involvement in renal tumors is a challenging problem for the operating surgeon. Expertise in dissection, isolation and exploration of this large caliber vein is important in management of these tumors. We report our institutional experience in operative management of renal tumors with IVC involvement.

**Methods:** All adult and pediatric patients with renal tumors and IVC involvement who underwent surgery between 2009 and 2015 were included. Demographic and clinical data, type of tumor, extent of IVC involvement, and operative management strategies were recorded.

**Results:** Between 2009 and 2015, 14 adult and 4 pediatric (total 18) patients with renal tumors involving the IVC were identified. Twelve patients had renal cell carcinoma, 3 patients had Wilms’ tumor, 2 adrenal tumors, and one patient had clear cell carcinoma of the kidney. Median age was 59 years in adult population and 2 years in pediatric population. Median tumor size was 13 cm (Range 6.8 – 20 cm). Median Hospital Stay was 7 days. Two patients had tumor adherent to IVC which were separated using sharp dissection. Ten patients were managed with IVC thrombectomy. Five patients underwent cavotomy or sleeve resection followed by lateral repair of IVC, while one patient had the tumor densely adherent to IVC which required segmental IVC resection and end-to-end anastomosis.

**Conclusion:** Management of renal tumors with IVC involvement depends on type of tumor and the extent of IVC involvement but requires expertise in vascular dissection, and reconstruction. We propose a modification to the current classification system of renal tumors involving the IVC which helps in selecting the management strategy in these patients.

**Keywords:** Inferior Vena Cava, Renal Tumors

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**Cancer Cell Growth can be reduced by Extracts of umbilical Cord Wharton’s Jelly Stem Cells**

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**Abstract**

**Background:** Cancer treatment remains a serious challenge and cancer is the main reason of death in the world. Recently, it has been revealed that mesenchymal stem cells (MSCs) are recruited to locations of tissue injury and inflammation. These characteristics of mesenchymal stem cells have led to the use of MSCs to transfer anticancer agents for example cytokines, apoptotic inducers, interferons, and pro-drugs to tumor locations for growth inhibition. Regardless of acting as delivery device, MSCs have also been shown to interact with tumors and inhibit tumor growth depending upon the tumor types they are in touch with. We evaluated anticancer effects of HWJSC on some cancer cell lines.

**Material and methods:** The cells were exposed to extracts of umbilical cord Wharton’s Jelly Stem Cells for 48-72h and changes in cell morphology, proliferation and cell death were examined.

**Result:** Understudying cancer cell lines showed cell shrinkage with HWJSC extract compared to controls. Neutral red uptake assays showed reduction of cell growth.

**Conclusion:** HWJSCs have tumor inhibitory properties and these effects are mediated through agents in its extracts.

**Keywords:** Cancer Cells, Cell Growth Inhibition, Extract Human Wharton’s Jelly

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**Orlistat Increase Hepatotoxicity of Pioglitazone in HepG2 Cell Line**

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**Abstract**

**Background:** Several drugs are used to treat diabetes and its associated complications. The aim of this study is to evaluate the effect of anti-diabetic drug pioglitazone and anti-obesity drug orlistat on HepG2 cells.**

**Material and Methods:** In this study, HepG2 cells were used. The MTT assay was used to assess cell viability. Catalase (CAT) activity and malondialdehyde (MDA) content, super oxide dismutase (SOD) activity and glutathione peroxidase (GPs) activity were measured as oxidative stress indicators to understand the mechanism of toxicity.

**Results:** Pioglitazone and Orlistat combination caused a loss of HepG2 cells in dose-dependent manner. Pioglitazone (25 μM) in the
Abstract

Introduction: Nowadays, there is an approximately more than two million medical radiation workers all around the world with long-term occupational exposures to low dose ionizing radiations. According to increasing necessity of medical services and rising request for various radiologic examinations, the radiation exposure of medical radiation workers may also be increased. Since the cancer incidence is a biological effect and the potential risk of exposure to ionizing radiation, the aim of this study is to survey the relation between cancer occurrence and low dose chronic occupational radiation exposures, in radiologic technologists.

Material and Methods: Search for English investigation essays with title/abstract filter was conducted in the Pub Med database with no time limitation. The keywords of “radiologic technologist”, “medical radiation workers”, “radiographer” and “cancer risk” were used. The title and abstract of the articles were studied and the related ones were selected and evaluated.

Results: 381 papers were identified via initial monitoring. The remaining 26 articles, after the elimination of duplicates, reviews and irrelevant ones, were analyzed; and as a result, higher cancer risk was found among medical radiation workers in comparison to other people.

Discussion and Conclusion: Medical radiation workers represent the largest working group exposed to human-made sources of radiation. Due to the fact, that cancer incidence is one of the stochastic effects of exposure to ionizing radiation, this study is focused on association between radiation and cancer risk in this occupational population; and our data are reflecting the excess risk of cancer incidence in this group. Although the increased risk of cancers was concluded in total, some studies only referred to an increase in specific cancer types, not for all cancers combined.

Furthermore, the obtained results of a number of papers showed the raising cancer occurrence just among technologists who began working before 1950s; which means that occupational exposures before 1950, has likely provided adequate dose for cancer. It also indicates the significant affection of radiation protection in reduction of cancer incidence for the recent years.

Keywords: Cancer Risk, Radiation Workers, Occupational Exposure, Ionizing Radiation
Tumor-Targeted Delivery of Anti-Cancer Peptides Using Bacteria

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Abstract

Introduction: The breast cancer is the most common type of cancer in women. Medical scientists observed, more than a century ago, that some cancer patients were cured of their tumors following postoperative bacterial infection. Some genera of bacteria such as Salmonella and Escherichia coli have been analyzed as anticancer agents and have been shown to selectively target tumors after intravenous injection. This bacteria has particular promise as a cancer therapy because it can be manipulated to express anti-cancer factors in tumors site. The heart synthesizes four cardiac peptides that were examined for their ability to anti-cancer activity. In this regard the project is underway to evaluate the tumoricidal effects of Ecoli and Salmonella that expresses the cardiac peptide on breast cancer cells.

Material and methods: The polycistronic expression cassette was designed for expression anti-cancer cardiac peptides in this cassette, cardiac peptides were expressed under control of nirb promoter. Nirb promoter is activated under anaerobic conditions. In upstream of each peptide ribosome binding site was placed. Also GFP protein was used as a reporter under the control of separate promoter. This expression construct was cloned in the appropriate bacterial vector. The cassette was transformed in Salmonella and Escherichia coli. Expression cassette was induced by anaerobic conditions.

Results: The polycistronic expression cassette was successfully designed and synthesized. The PCR stages on this cassette was done well. Extraction of GFP gene was performed by PCR. The GFP gene and peptides cassette was connected with soeing PCR. The PCR production was cloned successfully in appropriate vector and was transformed with high yield in Salmonella and Escherichia coli. The result of sequencing and colony PCR was satisfactory. The bacteria containing cassette express peptides and GFP protein in anaerobic condition successfully.

Discussion: Therefore, this bacteria will produce peptides and GFP in tumor site and by this procedure the purification and injection of drugs to animal will be removed.

Keywords: Polycistronic- Cardiac Peptides-Breast Cancer-Targeted Therapy

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Methyltransferase 1 May be as a Target for Eugenol in Cancer Therapy: A Virtual Analysis

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Abstract

Introduction: DNA methylation is an important approach for gene transcription regulation. This event is dependent to same proteins and enzyme such as DNA binding proteins and DNA methyltransferase 1 (DNMT1). Several studies have shown that DNMTs can potentially be used as anti-cancer targets. Epigenetic regulation of gene transcription could be under impact of nutrional components such as herbal ingredients. Virtual analysis is a helpful tool to estimate probable interactions between ligands and proteins. Herein, an in silico investigation was used to explore interaction of Egenerol

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and DNA methyltransferase enzymes to address if DNA methylation might affect by Eugenol as an herbal ingredient. Eugenol has been described as an antioxidant with strong anti-proliferative potential against various cancers. This study aimed to analyze the interaction of Eugenol with WRN using Molegro Virtual Docker.

**Material and Methods:** This study aimed to analyze the interaction of Eugenol with DNMT1 using Molegro Virtual Docker. For this purpose, cheminformatics structure of Eugenol was obtained from Zinc Docking data base. Protein 3D structure of DNMT1 was obtained from protein data bank (PDB) and also its structure modelling with SWISS-MODEL WORKSPACE. Interpretation of results is according to the fact that more negative value of docking score means a better interaction of ligand-protein.

**Results:** Our InSilico results showed that Eugenol interacts with a negative score equals to -108 meaning that it targets DNMT1. Interestingly, Eugenol interacws with that binding site of DNMT1 which is for s-Adenosyl Methionine (SAM). SAM is the substrate of DNMT1 for methylation reaction. Trans-Cinnamaldehyde interacts via a hydrogen bond with Asparagine 1578 of protein sequence.

**Discussion and Conclusion:** We conclude that Eugenol interaction with SAM binding site inhibit the methylation process of DNA and affect the behavior of cell and its responses to environmental factors. Therefore, methyltransferase could be one of the best candidates for interaction with Eugenol in cancer therapy.

**Keywords:** DNA Methyltransferase 1, Eugenol, Molegro Virtual Docker

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### ALCAM as Prognostic Indicator for Different Type of Carcinoma

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**Abstract**

**Introduction:** Activated leukocyte cytoplasm molecule (ALCAM) is a cancer stem cell marker. A glycoprotein that is involved in both homotypic and heterotypic adhesion identified as an important marker for melanoma, breast cancer, esophageal cancer, Gastric Cancer and other cancers. Studies have shown variable levels of ALCAM expression at different stages of tumor development. The highest level of ALCAM transcription indicate premalignant state of breast cancer but in patients who had metastasis it was lowest level.

**Materials and Methods:** For targeting receptor, an expression cassette designed. VH and VL domains are linked with the 16 amino acids linker. Signal sequence added to the beginning (N terminus) of sequence for secretion of native protein. Then considering rare codon expression cassette optimized using optimizer online software to obtain favor codon in bacterial host.

**Result:** Expression cassette formed the ALCAM scFv construct which cloned and expressed in bacterial hosts. This peptide is able to aim epitope of CD166 as an antigen.

**Conclusion:** ALCAM expression has been suggested as diagnostic marker for different type of carcinoma. Overexpression of ALCAM correlated with primary grade in breast cancer, accordingly it can be used as early diagnosis and treatment.

**Keyword:** ALCAM, cancer Stem Cell, Cancer

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### The Effect of Cognitive–Behavioral Group Therapy on Depression in Patients with Cancer

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**Abstract**

One of the most common complications of cancer is subsequent psychological problems; including depression reduced vital function, and increased risk of mortality. The objective of this study was to evaluate the effect of cognitive-behavioral group therapy on relief of depression among patients with cancer.

This research was a semi-experimental study including pre-test, post-test and control groups. The society consisted of patients with cancer who referred to Razavi Hospital of Mashhad. 24 patients with cancer who were selected based on DSM-5 distinctive standard and Beck depression inventory. The experiment group was treated by cognitive-behavioral therapy in 8 sessions of 1.5 hours, and the control group received no psychological therapy. The data were analyzed by T-Test and covariance analysis using version 15.0 of SPSS software.

After treatment, depression score in the experiment group decreased from 28.42±1.86 to 8.58±7.38 (P<0.001); however depression score significantly in the control group did not change.

Cognitive-behavioral group therapy plays an important role in depression relief in patients with cancer. Psychological intervention can help patients to change their cognition by decreasing depression and enable them to have a more positive belief.

**Keywords:** Depression, Cancer, Cognitive-Behavioral Group Therapy

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### Evaluation of Risk Factors in Children with Acute Lymphoblastic Leukemia in Mashhad- Iran

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**Abstract**

**Background:** Childhood leukemia comprises 35% of all malignancies in Children fewer than 15 years of age. Acute lymphoblastic leukemia (ALL) accounts for approximately 75-80% of childhood leukemia with an incidence of 0.004%, that shows a peak between 3-5 years of age.

The cause of leukemia is not exactly clear, but some researches have shown a significant relation between some factors and this type of cancer. In this survey we wanted to find the effective factors causing cancer in children in Mashhad Iran.

**Materials and Methods:** Since cancer is a rare disease, the best method for the study is the case–control study. The adequate sample size was 100 cases and 400 controls. Controls were matched...
with cases regarding their sex, age and habitation. Data collection method was face to face interview with patients’ mothers and the questionnaires were filled out by the investigator. After data collection, they were analyzed by conditional logistic regression. For data analyzing SPSS softwares were used.

**Results:** According to the findings of this study, maternal use of oral contraceptives, living in proximity to high voltage power lines, in-utero ionizing radiation exposure, pesticide exposure in fathers and paternal occupation and parental smoking had a significant relation with this type of cancer.

**Conclusion:** According to the results of this study, it seems that genetic, prenatal, perinatal and environmental factors have an important role in etiology of this cancer and knowing these facts are important for the prevention of cancer.

**Keywords:** Lymphoblastic Leukemia, Children, Risk factor, khorasan Province

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### The Effect of Temporin-Ra Antimicrobial Peptide on expression of Tomur Cancer Marker, CD44, in A549, a Human Lung Adenocarcinoma Cell Line.

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**Abstract**

**Introduction:** Antimicrobial peptides are molecules present in native immune systems of vertebrates and invertebrates. These small peptides inhibit the growth of pathogens invading host’s body and play a crucial role in innate immunity. Recent studies showed that these peptides have toxic effects on cancer cells. In this survey, Temporin-Ra (T-Ra) is an antimicrobial peptide which its effect was investigated on CD44 cancer markers which are up regulated in A549, adenocarcinoma human lung cancer cells.

**Materials and Methods:** In this study, to assess expression of CD44 cancer marker in A549 cell line, the expression levels of this marker was investigated by real time-PCR, 48 h after administration of different doses of T-Ra peptide on cells. The toxicity effect of T-Ra antimicrobial peptide on A549 cell line was investigated by MTT assay. To study the toxic of peptide on host’s cells, the hemolytic and cytotoxic effect of peptide was performed on human’s red and white blood cells through hemolysis assay and Ficoll-hypaque technique, respectively. Furthermore, the production of reactive oxygen species was studied through flow cytomtery after 48 h of T-Ra addition to A549 cell line.

**Results and Conclusion:** According to our results, T-Ra significantly decreased the expression of CD44 cancer marker about 2-2 fold. In addition, T-Ra decreased the viability of A549 cells up to 15%, while had no hemolytic and cytotoxic effects on human blood cells. Furthermore, production of reactive oxygen species significantly increased. To sum up, our results demonstrate that T-Ra could increase CD44 cancer marker expression in A549 and has a role in reduction of metastasis.

**Keywords:** Temporin-Ra, Real Time RT-PCR, Reactive Oxygen Species, Flow Cytometry, CD44

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### Dosimetric Verification of Small Fields in Lung Using a Lung-Equivalent Polymer Gel and Monte Carlo Method

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**Abstract**

**Introduction:** The main goal of radiation therapy is achieving maximal dose to the tumor and minimum dose to surrounding healthy tissue. The aim of this study was to determine the amount of radiation absorbed dose for small fields in a low density electron imbalances such as lung by polymer gel dosimetry and Monte Carlo simulation.

**Material and Method:** MCNP4C were used to calculate the absorbed dose and profiles in the lung phantom. Lung phantom and soft tissue with and without tumors in the lung tissue in the middle layer was formed, photon beams of 6 and 18 MV produced by ONCOR Siemens linear accelerator were simulated. Lung equivalent gel with a density equal to 0.45 g/cm3 were prepared accordingly. The samples were irradiated using a Siemens ONCOR with the same energy. Imaging of samples was performed with (5.1T) magnetic resonance imaging. By analyzing the images as well as the percentage depth dose values for comparison were calculated by Monte Carlo methods.

**Results:** This study showed that the dose at the interface water-lungs began to decline and slowly decreases with increasing depth into the lungs. And in the second place of the interference of the lungs - the water dose increases. For 6 MV energy beam at a depth of 7 cm reduction in lung dose compared to the water in order for fields 0.5 × 0.5 to 3 × 3 cm2 were 44%, 39%, 13% and 7% in which this dose reduction for 18 MV energy beam to the field size were 82%, 70%, 46% and 26%. The results obtained from the gel of lung irradiation in agreement with the results of the Monte Carlo method.

**Conclusion:** From this study it can be concluded that due to the imbalance of electrons in low-density areas and in small fields used in radiotherapy, dose reductions in these areas will reduce the rate of increase in energy fields and increases the rate of dose reduction.

**Keywords:** Monte Carlo Method, Gel Equivalent Lung Dose, Radiation Therapy, Magnetic Resonance Imaging

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### Comparison Between PET and CT Scan Operations in Staging and Surveillance of NSCLC

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**Abstract**

**Background:** Bronchogenic carcinoma is the leading cause of cancer-related death in the Western world. Accurate staging is essential, because it provides prognostic information and affects treatment options. Currently, radiologic staging is pursued by us-

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ing a combination of methods, which usually includes contrast
equipped-computed tomography (CT). Positron emission
tomography (PET) by using $^{18}$F-fluorine 18 $^{18}$F-fluoro-2-deoxy-D-glucose (FDG) has shown to be an accurate imaging modality that comple-
tments conventional procedures in evaluating patients with bron-
chogenic carcinoma. No single modality provides all of the requi-
site information.

Objectives: This study aimed to determine if PET was more accurate in
staging newly diagnosed lung cancer than the series of conven-
tional imaging studies.

Methods: MEDLINE, PubMed, Scholar and some other databases,
from 1995 to 2015, were searched for initial studies.

Results: On average, PET staging was sound in 83% of patients, while
conventional imaging staging was accurate in diagnosing the symp-
toms in 65% of cases. PET also demonstrated an advantage over CT in
determining regional lymph nodes. From clinical standpoint, one of
the most important decisions to make is to determine if the pa-

tient is a surgical candidate or not

Conclusion: Whole-body PET can be very useful in staging newly di-
agnosed lung cancer. There is a significant improvement in staging
thorax with PET than CT, with a predicted reduction in the morbid-
ity rate and cost associated with unnecessary interventional proce-
dures.

Keywords: Bronchogenic Carcinoma, Imaging, FDG

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History of Atopy and the Risk for
Neoplasms: Is There a Converse Relation?

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Abstract

There has been a suggested converse relation between the history of
atopy, allergy, and autoimmune conditions and the occurrence of
neoplasms in affected individuals. For instance, substantial amount
of data on the inverse association between atopic conditions and
glioma prevalence in the same individuals have been published.
On the other hand, some Atopy-Related Immunologic Candidate
Genes maybe associated with an increased risk of pancreatic cancer.
A population-based prospective study also states that the collected
data does not support the altered risk of neoplasms in individuals
affected with atopy however the converse effect in some specific
neoplasms can not be excluded. In this review, we briefly discuss the
ongoing conversation on the possible effect of a history of atopy and
the risk of neoplasia and also cover noteworthy data from both
population-based and case-control studies.

Keywords: Atopy, Glioma, Atopy-Related Immunologic Candidate
Genes

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Gene Regulation of TNF-alpha Pro-
Inflammatory Cytokine and CD44 Cancer
Marker in A549 Adenocarcinoma Cell
Line Treated with GL-9 Synthetic Peptide

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Abstract

Introduction: CD44 is a member of cell adhesion molecules family,
which influences the cell motility, migration and adhesion, while
in tumor cells they lead to tumor invasion, progression and me-
tastasis. The role of CD44 cell surface molecule has been identified
in mediating lung cancer cells proliferation. It has been identified
that through deletion of CD44 we can moderate the lung adenocar-
cinoma formation. Tumor necrosis factor alpha (TNF-\alpha) is a pro-
inflammatory cytokine. There are evidences that show TNF-\alpha roles
in tumors cell death. GL-9 is a synthetic peptide with \textit{GASRHWYFL}
sequence. GL-9 and its analogues have been used for the Hydrolysis
of specific Ser/Thr peptide bond in a mixture of Ni (II). The aim of this

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Thyroid cancer Incrementaffected by
head CT-scan

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Abstract

This study was conducted to estimate thyroid dose and the associ-
ated risk for thyroid cancer induction from head computed tomog-
raphy (CT) examinations.

This international trend of increasing population exposure to medi-
cal diagnostic sources of radiation, attributed in large part to the
growing use of computed tomography scans, but also interven-
tional radiology procedures, has raised concerns about exposure to
radiosensitive organs such as the thyroid. Although the radiation
exposure from computed tomography scans is substantially lower
than that from radiotherapy, multiple computed tomography scans
could result in non-trivial cumulative doses to the thyroid.

Thyroid exposure to scattered radiation from head CT scanning is
associated with a low but significant risk of cancer induction of 4-65
per million patients. The scattered dose to thyroid from head CT
examinations varied from 0.6 mGy to 8.7 mGy depending upon the
scanned region.

For all types of cancer combined, incidence was 24% greater in the
exposed people than in the unexposed ones.

The eventual lifetime risk from CT scans cannot yet be determined
but some increase in cancer risk is still likely from current scans.
Future CT scans should be limited to situations where there is a defi-
nite clinical indication, with every scan optimized to provide a diag-
nostic CT image at the lowest possible radiation dose.

National and international efforts have been developed to raise
awareness and to standardize procedures for use of computed
tomography and interventional radiology procedures in general
populations.

Keywords: Thyroid, CT-Scan, Head, Radiation

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study was to examine the cytotoxic effect of GL-9 peptide on A549 cell line through regulation of TNF-α and CD44 gene expression.

**Methods:** The ability of GL-9 peptide to change the gene expression of CD44 cancer marker and TNF-α was pro-inflammatory cytokine was studied using A549 lung cancer cells. First, via MTT assay we investigated the suitable dose and time for GL-9, which are effective on A549 cell line existence. The change in CD44 and TNF-α gene expression was measured in A549 treated cells in a time-dependent manner through real time RT-PCR. Moreover, the cytotoxic effect of GL-9 peptide on human normal blood cells was examined through hemolysis and Ficoll-Hypaque gradient centrifugation.

**Results:** To evaluate the cytotoxicity of GL-9 peptide, A549 cells were treated with three different concentrations (12.5, 25, 50 µg/ml) of GL9 peptide in 24 h, 48 h, 72 h and 96 h. Based on the results obtained from MTT assay, GL-9 showed cytotoxicity on A549 cells at 12 and 50 µg/ml concentrations after 48 h. Also, 12 and 50 µg/ml concentrations of GL-9 peptide up-regulates the TNF-α and down-regulates the CD44 gene expression after 48 h. Furthermore, GL-9 peptide revealed no significant effect on human red and white blood cells.

**Conclusions:** To make it brief, GL-9 peptide might be a target for lung cancer treatment through up-regulating of TNF-α gene expression. An increase in TNF-α expression, down regulates the CD44 cancer marker gene expression, which will descend the A549 lung cancer proliferation, migration and may result on lung cancer cell death.

**Keywords:** Adenocarcinoma Cell Line (A549), GL-9 Peptide, TNF-α, CD44, Cytotoxicity.

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**Management of Cervical Lymph Node Metastases in Papillary Thyroid Cancer: Selective or Radical Lymph Node Dissection?**

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**Abstract**

**Introduction:** Papillary thyroid cancer (PTC) is frequently associated with metastasis to cervical lymph nodes (CLNM). Nodal involvement increases recurrence rate and affects the quality of life and prognosis. We studied our institutional experience in management of PTC with CLNM and compared patients who underwent radical compared to selective lymph node dissection.

**Methods:** We performed a retrospective chart review of patients with PTC presenting with CLNM over an 18 year period. Patient demographics, clinical presentation, operative details, follow-up and recurrence data was collected and analyzed using SPSS v19. The patients undergoing selective and radical lymph node dissection were compared in terms of postoperative outcomes.

**Results:** A total of 127 patients with PTC presenting with CLNM underwent neck dissection between 1997 – 2014. Of these patients radical dissection was performed in 83 necks and selective neck dissection was performed in 54 necks. Twenty (20) patients underwent bilateral neck dissection. The number of lymph nodes retrieved was higher in radical compared to selective lymph node dissection but the hospital stay, complications, readmissions, re-interventions were comparable in both groups. Over a median follow-up duration of 52.5 months, there was no statistically significant difference in recurrence and mortality between patients undergoing radical or selective lymph node dissection.

**Conclusion:** Our institutional experience in a specialist oncologic center suggests that selective neck dissection performed for PTC with CLNM results in operative and oncological outcomes comparable to radical neck dissection.

**Keywords:** Papillary Thyroid Cancer, Cervical Lymph Node Metastasis, Selective Neck Dissection

# Razavi Int J Med. 2016 May; Special Issue: e6219

**Apparent Diffusion Coefficient as a New MRI Marker to Differentiate High and Low Grade Meningiomas: Review of the Recent Trend**

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**Abstract**

Through the years there have been several studies suggesting different imaging markers for determining tumors’ behavior and their grading. The advantage of these imaging markers is their non-invasiveness and the fact that in contrary to biopsy, they’re not dependent on the specimen sufficiency which is frequently encountered in the former setting. Among different MRI markers, Apparent diffusion coefficient (ADC) has been receiving undivided attention regarding it’s possible application for the differentiation of low and high grade tumors in several neoplasms. The possible application of ADC in the grading of many different neoplasms has been evaluated in several studies, demonstrating a relation in many tumors. There have been a very recent trend in the literature towards ADC as a MRI marker for staging of meningiomas. Using ADC in MRI of patients suffering from meningiomas could possibly eliminate the need for biopsy which could result in several complications. In this review, we briefly discuss the recent trend on the evaluation of ADC as a MRI marker for the grading of meningiomas.

**Keywords:** Apparent Diffusion Coefficient, Magnetic Resonance Imaging, Meningioma

# Razavi Int J Med. 2016 May; Special Issue: e6125

**Effects of Reconstruction Parameters in the Measurement of the Left-Ventricular Volumes and Function on Gated SPECT Images; Dynamic Heart Phantom Study**

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**Abstract**

Fusion is a very complicated task when different imaging markers for determining tumors’ behavior and their grading. The advantage of these imaging markers is their non-invasiveness and the fact that in contrary to biopsy, they’re not dependent on the specimen sufficiency which is frequently encountered in the former setting. Among different MRI markers, Apparent diffusion coefficient (ADC) has been receiving undivided attention regarding it’s possible application for the differentiation of low and high grade tumors in several neoplasms. The possible application of ADC in the grading of many different neoplasms has been evaluated in several studies, demonstrating a relation in many tumors. There have been a very recent trend in the literature towards ADC as a MRI marker for staging of meningiomas. Using ADC in MRI of patients suffering from meningiomas could possibly eliminate the need for biopsy which could result in several complications. In this review, we briefly discuss the recent trend on the evaluation of ADC as a MRI marker for the grading of meningiomas.

**Keywords:** Apparent Diffusion Coefficient, Magnetic Resonance Imaging, Meningioma
Abstract

Purpose: Verification of the left ventricular ejection fraction (LVEF) exactly is a technique for investigating coronary artery disease (CAD). It estimates the value of LVEF during myocardial perfusion scan. Therefore, this study compare the estimation performance of the quantitative parameters of the reconstruction methods filtered backprojection (FBP) and ordered subset expectation maximization (OSM). Using Quantitative gated SPECT (QGS) and 4DM software analizing methods.

Method and Materials: A dynamic heart phantom with known values of end-diastolic volume (EDV), end-systolic volume (ESV), and LVEF using QGS and 4DM were used to obtain these quantitative parameters. The Butterworth filter was used in FBP, with the cutoff frequencies between 0.3 and 0.8 cycles per pixel combined with the orders 5, 10, 15, and 20. Reconstructions were performed using 2, 4, 6, 8, 10, 12, and 16 OSEM subsets, combined with several iterations: 2, 4, 6, 8, 10, 12, and 16.

Results: With FBP, EDV, ESV rise as the cutoff frequency increases, whereas the value of LVEF diminishes. This same pattern is verified with the OSEM reconstruction. However, with OSEM there is a more precise estimation of the quantitative parameters, especially with the combinations 2 iterations & 10 subsets and 2 iterations & 12 subsets.

Conclusion: The OSEM reconstruction presents better estimations of the quantitative parameters than does FBP. This study recommends the use of 2 iterations with 10 or 12 subsets for OSEM and a cutoff frequency of 0.5 cycles per pixel with the orders 5, 10, or 15 for FBP as the best estimations for the left ventricular volumes and ejection fraction quantification in myocardial perfusion scintigraphy.

Keywords: FBP, OSEM, QGS, 4DM, Reconstructions

The Relationship Between Different kinds of Neurofibromatosis and Change Each One to Spinal Tumor

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Abstract

Among different subtypes of neurofibromatosis (NF), type 1 (NF1) predominates in frequency (approximately 97% of NFs’ patients) with an incidence of approximately 1 in 3500 live births. NF-2, comprises 2% of the NF population and is a very rare disease (1:40,000). Both are autosomal dominant disorders with 100% penetration. Mutations result in a predisposition to develop a variety of tumours of the central and peripheral nervous systems, as well as other malignancies.

The aim of this study is relation between different kinds of neurofibromatosis and change each one to spinal tumor

In previous studies, the results are as follows:

Individuals with subcutaneous neurofibromas were approximately three times more likely to have internal plexiform neurofibromas or malignant peripheral nerve sheath tumors [MPNST] than individuals without subcutaneous neurofibromas. Individuals with internal plexiform neurofibromas were 20 times more likely to have MPNSTs than individuals without internal plexiform neurofibromas.

Keywords: Neurofibromatosis, Spinal Tumor

The Correlation Between RAD51 Expression and Clinical Outcomes in Patients with Glioblastoma Multiform

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Abstract

Glioblastoma Multiform is the most common and most malignant of the glial tumors. The prognosis for patients with glioblastoma is poor, and tumors are highly resistant to chemotherapy and radiotherapy.

RAD51 is a highly conserved well-characterized DNA repair protein that has a central role in the homologous recombination (HR) pathway. High levels of RAD51 protein expression have been reported in a number of human cancer cell lines, and studies suggest that RAD51 overexpression can increase cellular resistance to radiation and some chemotherapeutic drugs further. Lower RAD51 expression or inhibition have been shown to sensitize cancer cells to chemotherapeutic drugs and ionizing radiation.

In this study, RAD51 protein levels will quantify by immunohistochemistry in samples from patients with glioblastoma who received identical treatment with induction chemotherapy followed by radiation therapy given concurrently.

We hypothesis that tumor cell RAD51 expression levels may influence the clinical outcomes of patients with glioblastoma multiform treated with chemotherapy and radiotherapy.

Keywords: Glioblastoma Multiform, DNA Repair, RAD51, Homologous Recombination, Molecular Markers

Cerebral Blood Volume as a Prognostic Marker in Glioblastoma Patients Treated with Bevacizumab: a Systematic Review

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Abstract

Context: Bevacizumab is an FDA approved antiangiogenic agent for the treatment of recurrent glioblastoma. Patients have varied response to this treatment and it is important to identify biomarkers that can predict responders.

Objective: To systematically review the prognostic value of cerebral blood volume (CBV) in glioblastoma patients treated with bevacizumab.

Data Sources: PubMed, Scopus and EMBASE databases were
searched until March 2016 using the following search strategy: “glioblastoma AND bevacizumab AND ('cerebral blood volume' OR 'relative blood volume' OR CBV OR rCBV or RBV)

**Study Selection:** Two authors independently reviewed the retrieved articles. All studies that evaluated the prognostic value of cerebral blood volume in glioblastoma patients treated with bevacizumab were included. Case reports, letters to editor and review articles were excluded.

**Data Extraction:** Data extraction for included studies was performed independently by two authors. Quality of studies was assessed using Oxford Center for Evidence-Based Medicine checklist for prognostic studies.

**Results:** Eight studies (303 patients) were included. In six studies all the patients had recurrent glioblastoma and in one study patients with grade III glioma were included as well. OS and PFS were the outcomes of interest in 7 and 8 studies, respectively. To evaluate the prognostic value of cerebral blood volume, six studies performed log-rank survival analysis and five studies used univariate or multivariate Cox proportional hazards model, three of which reported hazard ratios. Cerebral blood volume was reported as a significant predictor of OS and PFS in 4 studies (175 patients).

**Conclusions:** The conflicting results of included studies indicate the application of cerebral blood volume as a prognostic factor in glioblastoma patients treated with bevacizumab is uncertain. We suggest performing a meta-analysis to further explore this prognostic role.

**Keywords:** Bevacizumab, Glioblastoma, Cerebrovascular Circulation, Prognosis, Systematic Review

**Abstract**

Radiation therapies is an effective treatment for brain cancers, but sometimes induces devastating side effects, including disruptions in memory and concentration and in the ability to do executive functions such as planning, and multitasking, severely limiting quality of life. The adverse effects of radiotherapy on the brain and cognition are progressive and difficult to reverse, and to date, there are no satisfactory long-term solutions for this serious clinical problem. Limoli and et al have been evaluated the effects of intrahippocampal transplantation of human neural stem cells in irradiated laboratory rats. They showed significant improvement in cognitive function in irradiated rats that received the neural stem cell transplants. Radiation induced late normal tissue injury in the brain, such as necrosis and edema. neural stem cell differentiate to new brain cells to the hippocampus and helps to maintain cognitive health. Importantly, the depletion of these stem cells and the resulting cognitive deficits occur in the absence of any overt histologic or radiographically visible damage. Studies are also in progress using human NSC transplantation to restore cognitive function following brain trauma, and evidence suggests the strategy may be beneficial in the treatment of Alzheimer's disease and for alleviating side effects in any normal tissue subjected to radiation exposure. The field of regenerative medicine in radiation oncology is still very new; it holds a great deal of promise for the rehabilitation of many cancer survivors.

**Keywords:** Brain Cancer

**Comparison of Neurosphere Body Derived from Human Glioblastoma Tumor and Amygdala**

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**Abstract**

**Introduction:** Stem-like cells have been isolated from brain, such as glioblastoma tumor and epileptic regions. A critical issue in all these tissue cultured especially in glioblastoma is to recognize and isolate tumor initiating cell population(s) to investigate their role in tumor expansion and recurrence.

**Materials and methods:** Samples were collected from patient diagnosed with the cancer and epileptic patient undergoing surgery. The resected tissues were transferred to the research center. After removing the debris, tissue was dissociated enzymatically with accutase and mechanically with transfer pipettes. After centrifugation and resuspension the pellet, cells are plated in complete NSC medium supplemented with 10 ng/ml FGF2, 20 ng/ml EGF, heparin (2 µg/ml), 2% B27-Supplement and 1% Pen/strep in non-coated flasks. The flasks were placed in a 37°C incubator set at 5% CO2. Additional neurosphere medium was administered twice every week.

**Result:** The number of cells and spheres were evaluated. After 6-9 days, primary neurospheres of 150-200 µm in diameter could be observed and were ready for further passaging and expansion. Proliferation of the tumor cells was faster than epileptic cells. Also the size and number of tumor neurospheres was more than the epileptic spheres.

**Discussion:** The neurosphere assay has been used to isolate neural stem cells from amygdala and also tumor stem-like cells from glioblastoma. These cells could be used to study the cell biology of cancer including differentiation, cell death and cancer therapy.

**Keywords:** Glioblastoma, Amygdala, Neurosphere assay

**The Role of Microenvironment in Meningioma**

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**Abstract**

Meningioma is a non-epithelial tumor that arises from the arachnoid cap cells of the dural sheath and the meningothelial cells of the leptomeninges. They are one of the most common brain tumors, and although they are usually benign, they can be aggressive, grow rapidly, invade brain tissue, and cause significant morbidity. Our study is a review article about the microscopic features of meningioma, their molecular pathways, and the microenvironment, including the role of angiogenesis and immune cells. The results of our review show that meningioma has a wide range of clinical behavior, and may be classified into different groups based on their molecular pathways and microenvironment. This review will provide a comprehensive overview of the current understanding of meningioma, which may help in the development of new therapeutic strategies.
Brain cancer is one of the most destructive central nervous system pathologies and recent studies propose that cancer stem cells (CSCs) are the most important oncogenic cells in brain cancer. Notwithstanding the importance of tumorigenic CSCs in the pathogenesis of brain cancer, increasing demonstrates support a role for the microenvironment or stroma of brain cancer as an additional significant factor. Understanding the microenvironment of gliomas is important for glioma biology. It has been suggested that glioblastomas are maintained by glioma CSCs. Meningioma is one among the most common brain tumors and little is known about meningioma cell biology. The recent successful isolation and characterization of CSCs from meningioma has provided a better understanding of meningioma biology. As supported by recent studies, components of the meningioma stroma are also possible essential. The role of the tumor microenvironment in meningioma has attracted little attention.

Understanding of the cellular constituents of tumors and the tumor microenvironment may help influence the cancer immunotherapies in meningioma. This grasping of the cellular constituents of the tumor microenvironment has helped guide the design of cell therapy.

Keywords: Brain Cancer, Meningioma, Cell Therapy

Brain Tumor Following Neural Stem Cell Transplantation

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Abstract

It has been demonstrated that neurogenesis constitutively occurs in specific regions of the adult mammalian brain and that there are remarkable numbers of multipotent stem/precursor cells from many parts of the brain that may be used therapeutically. It has been suggested that the fetal brain, indicated by active neurogenesis to be a promising source of therapeutic neural stem cells. Neural stem cells are being examined as potential therapies for neurodegenerative diseases, stroke, and trauma. These cells have also been suggested as potential therapies for infants and children affected by genetic and acquired diseases characterized by neurological deterioration.

In vitro before implantation, the tumorigenic potential of embryonic stem cells (ESCs) appears to be greatly reduced when cells are predifferentiated. Notably, ESCs seem more prone to generate tumors when implanted into the same species from which they were derived. Therefore it has been noticed that the absence of tumors after implantation of human stem cells into rodents does not exclude their occurrence in the human brain. Recently the use of human ESC-derived dopaminergic neurons supplemented by coculture with telomerase-immortalized midbrain astrocytes resulted in undifferentiated expansion suggesting there was a potential for tumor development when injected to rodents.

In conclusion, neuronal stem/progenitor cells may be complicated in tumorigenesis. Further study is needed to measure the safety of neural stem cells therapies.

Keywords: Neural Stem Cells, Brain Tumor, Cells Therapy

Brain Tumor Stem Cells

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Abstract

There is now convincing evidence that the majority of the malignant cells in cancers are produced by rare fractions of self-renewing, multipotent, and tumor-initiating cells, termed cancer stem cells (CSCs). Whether CSCs arise from normal stem cells or more differentiated cells is not identified. However, CSCs look like the normal stem or progenitor cells of the corresponding tissue of origin. For example, brain CSCs express CD133 and Nestin that mark stem neural and progenitor cells. If tumors are derived completely from CSCs, then drugs that kill these cells could verify highly effective treatments of cancer. Another word, the similarities between normal and malignant stem cells predict that such treatments may also possess significant toxicities. However, the development of anti-CSC therapies for each type of cancer is likely to demand the identification of factors that maintain CSCs, but not normal stem cells, in each tissue. One important difference between normal stem cells and CSCs might be the degree to which these cells are regulated by the immediate microenvironment. Stem cells of various tissues exist within protective niches that are composed of a number of differentiated cell types. These mature cells provide direct cell contacts and secreted factors that maintain stem cells primarily in a quiescent state. In conclusion, CSCs might arise from normal stem cells that have acquired mutations that enable them to escape from niche control. Alternatively, deregulation of intrinsic factors within the niche might lead to uncontrolled proliferation of stem cells and tumorigenesis.

Keywords: Neural Stem Cells, Tumorigenesis, Brain Tumor

Immunotherapy in Glioma Tumors

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Abstract

Brain cancer is one of the major cancer types for which new immune-based treatments are currently in development. Astrocytomas originate in glial cells called astrocytes, the multidimensional star-shaped cells involved in cell repair and nutrient transport. The poor prognosis of glioblastoma (GBM) mandates new therapies. Food and drug administration approval of several immunotherapy agents over the past few years, much attention and resources have been directed towards new immune based approaches and therapies in all cancer types. Immunotherapy is treatment that uses certain parts of a person’s immune system to fight diseases such as...
cancer. Immunotherapy is an approach that is well suited to take on the global nature of malignant gliomas. Challenges include the tumor-induced immunosuppressive environment and the paucity of identified tumor-specific antigens. Defining the role of immunotherapy as a stand-alone therapy or in combination is actively being investigated. It is unclear if chemotherapy and radiation facilitate or inhibit antitumor immune responses. In addition, identification and characterization of relevant immune response biomarkers has been under intense investigation.

Keywords: Glioma Tumors

Depression and Emotional Distress in Brain Tumor Patients

Arezou Eshaghabadi, Sajad Sahab Negah

Malignant brain tumors usually cause devastating morbidity for those affected and for their families and typically result in death of the patient within a few years or less. For instance, even with aggressive radiation and chemotherapy regimens, the median survival for patients with grade 4 astrocytoma (glioblastoma multiforme or GBM) is about 12 months, and for grade 3 gliomas it is about 36 months. Focal neurological damage from radiation therapy and chemotherapy leads to neuropsychiatric problems in brain tumor patients. To control neurologic symptoms in this population, high dose corticosteroids used, which can result in side effects such as labile affect and behavioral changes. Cognitive changes and negative mood states associated with disease or treatment related neuropsychologic dysfunction is amplified by co-morbid psychosocial problems such as reactive depression, job loss, financial difficulties, and marital strife. Frequently reported neuropsychiatric problems in brain tumor patients include delirium, dementia, depression, anxiety, fatigue, somnolence and disinhibition disorders including restlessness, mania, and aggression. There is evidence that fatigue and depression are prevalent clinically important issues in patients with brain tumors.

Keywords: Brain Tumor

Psychological Stress May Have an Impact on Cancer

Sajad Sahab Negah, Zabihollah Khaksar, Shahin Mohammad Sadeghi, Hadi Aligholi, Sayed Mostafa Modarres Mousavi, Hadi Kazemi

People who have cancer may find the physical, emotional, and social effects of the disease to be stressful. Those who attempt to manage their stress with risky behaviors such as smoking or drinking alcohol or who become more inactive may have a poorer quality of life after cancer treatment. Experimental studies showed that psychological stress can affect tumor growth and spread. For instance, some research have shown that tumors were more likely to grow and spread (metastasize) when kept under stressful conditions. In a recent study, tumors transplanted into the mammary fat pads of mice had much higher rates of spread to the lungs and lymph nodes if the mice were chronically stressed than if the mice were not stressed. Studies on cancer cells indicated that the stress hormone norepinephrine, part of the body’s fight-or-flight response system, may promote angiogenesis and metastasis. Women who treated with neoadjuvant chemotherapy using beta blockers (interfere with certain stress hormones) had a better chance of surviving their cancer treatment without a relapse than women who did not report beta blocker use. Although there is still no strong evidence that stress directly affects cancer outcomes. It may be that people who feel helpless or hopeless do not seek treatment when they become ill, give up prematurely on or fail to adhere to potentially helpful therapy, engage in risky behaviors such as drug use, or do not maintain a healthy lifestyle, resulting in premature death.

Keywords: Brain Cancer