
Author: Keishi Fujiwara, Takayuki Yamada, Yoshihide Kanemaki, Satoko Okamoto, Yasuyuki Kojima, Koichiro Tsugawa and Yasuo Nakajima

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Abstract

OBJECTIVE. The purpose of this study is to analyze the association between the probability of malignancy and breast mass descriptors in the BI-RADS 5th edition and to devise criteria for grading mass lesions, including subcategorization of category 4 lesions with or without apparent diffusion coefficient (ADC) values.

MATERIALS AND METHODS. A total of 519 breast masses in 499 patients were selected. Breast MRI was performed with a 1.5-T MRI scanner using a 16-channel dedicated breast radiofrequency coil. Two radiologists determined the morphologic and kinetic features of the breast masses. Mean ADC values were measured on ADC maps by placing round ROIs that encircled the largest possible solid mass portions. An optimal ADC threshold was chosen to maximize the Youden index. Corresponding pathologic diagnoses were obtained by either biopsy or surgery.

RESULTS. A total of 472 masses were malignant. Multivariate model analysis showed that shape (irregular, p < 0.001), margin type (not circumscribed, p < 0.001), internal enhancement (rim enhancement and heterogeneous enhancement, p = 0.0001), and delayed phase (washout, p = 0.0003) were the significant explanatory variables. The 3-point scoring system for findings suspicious for malignancy and the proposed classification system for breast mass descriptors (with points for category designation ranging from 0 to > 4) were significant with respect to malignancy (p < 0.01). The inclusion of ADC values improved the positive predictive values for categories 3, 4A, and 4B.

CONCLUSION. The 3-point scoring system for findings suspicious for malignancy and the proposed classification system for breast mass descriptors would be valid as a categorization system. ADC values may be used to downgrade benign lesions in categories 3, 4A, and 4B.

Database

American Roentgen Ray Society
Abstract

OBJECTIVE. The goals of this review are to provide background information on the definitions and applications of the general term “biomarker” and to highlight the specific roles of breast imaging biomarkers in research and clinical breast cancer care. A search was conducted of the main electronic biomedical databases (PubMed, Cochrane, Embase, MEDLINE [Ovid], Scopus, and Web of Science). The search was focused on review literature in general radiology and biomedical sciences and on reviews and primary research articles on biomarkers in breast imaging over the 15 years ending in June 2017. The keywords included “biomarker,” “trial endpoints,” “breast imaging,” “breast cancer,” “radiomics,” and “precision medicine” in the titles and abstracts of the papers.

CONCLUSION. Clinical breast care and breast cancer–related research rely on imaging biomarkers for decision support. In the era of precision medicine and big data, the practice of radiology is likely to change. A closer integration of breast imaging with related biomedical fields and the creation of large integrated and shareable databases of clinical, molecular, and imaging biomarkers should allow the field to continue guiding breast cancer care and research.

Database

American Roentgen Ray Society
Cancer immunotherapy is one of the commonly used methods in the treatment of cancer. The aim of this approach is to strengthen or restore immune function for effective diagnosis of aberrant cells antigens. For this reason, cancer specific peptides or proteins are used as antigens to induce an immune response capable of removing cancer cells. Liposomal formulations are an important carrier system frequently used for delivery of antigen because the specific properties of this component such as lipid composition, charge, size, encapsulation of antigens, or adjuvants can be changed. Among different types of liposomal formulations, the use of cationic and pH-sensitive nanoliposomes has been markedly increased for liposome-based vaccines. In this review, we describe the properties of nanoliposomes as delivery systems for cancer immunotherapy.

Database

Wiley Online Library
Abstract

Palmitoyl ethanol amide (PEA) is an endogenous substance that plays a role in neuropathic pain. In this article, we evaluated both the safety and the efficacy of ultramicronized PEA (um-PEA) in the treatment of low back pain related to nonsurgical lumbar radiculopathy. In this prospective single-blind study, patients with low back pain related to nonsurgical lumbar radiculopathy received the fixed combination acetaminophen/codeine (500 mg + 30 mg/d) for 7 days, and then it was stopped and changed to um-PEA (1200 mg/d) for 30 days. Patients without an improvement in pain or disability started a second cycle of treatment with um-PEA (600 mg/d in tablets) for 30 days and then acetaminophen/codeine for 30 days. A total of 155 patients were included in the analysis. After the first cycle of treatment we recorded an improvement of pain in all patients with mild pain (visual analog scale score from 3-4 to 1) and in 75% of the patients with moderate pain (visual analog scale score from 5-6 to 2). After the second cycle, we recorded an improvement of pain and disability in all patients with moderate pain (P < .01), but in 26% of patients with severe pain we did not record any improvement in disability (P > .05). In conclusion we evaluated the role of um-PEA in patients with lumbar radiculopathy with a long-term follow-up (24 months) and put in evidence the effectiveness and the safety of this formulation in patients with mild and moderate pain.
Abstract

Objectives
Comorbidity incidence rates among US patients with ankylosing spondylitis (AS) treated with tumour necrosis factor inhibitors (TNFis) are inadequately understood. This study compared the relative occurrence of comorbidities between patients with AS treated with TNFis and those not treated with TNFis.

Methods
Adults aged ≥18 years enrolled in the MarketScan Commercial and Medicare Supplemental databases with a diagnosis of AS between 1 January 2008 and 30 June 2015 were eligible. Patients were divided into two groups, those treated with TNFis (TNFi users) and those not treated with TNFis (TNFi nonusers) during the 12 months after the index date, defined as the date of first TNFi treatment or a randomly assigned date for TNFi nonusers. Patients had to have continuous enrolment for 24 months with no AS diagnosis or TNFi therapy pre-index and a follow-up period of ≥12 months postindex. The incidence of new comorbidities was evaluated in patients and adjusted for baseline characteristics.

Key findings
A total of 3077 TNFi users and 3830 TNFi nonusers were included. A higher proportion of TNFi users had a new diagnosis of inflammatory bowel disease (hazard ratio [HR], 2.00), including Crohn's disease (HR, 2.45) and ulcerative colitis (HR, 1.65), as well as uveitis (HR, 1.68) and sleep apnoea (HR, 1.21) after initiation of TNFi therapy than TNFi nonusers.

Conclusions
Patients with AS treated with TNFis had higher incidence rates of IBD, uveitis and sleep apnoea after initiation of TNFi therapy than patients not treated with TNFi therapy.
Abstract

Emerging research documents the relationship between school burnout and some indicators of increased cardiovascular risk. Indicators of cardiovascular functioning assessed via ambulatory blood pressure and heart rate variability (HRV) have not been thoroughly explored in this research domain. Therefore, the current study examined relationships between school burnout and indicators of cardiac functioning via 24 h ambulatory blood pressure (BP) and electrocardiogram monitoring in a sample of young adult female undergraduates (N = 88). Two hypotheses were tested: (1) that independent of related negative affective symptomology (depression and anxiety), increased school burnout would be related to greater systolic and diastolic BP, higher low frequency (LF) HRV and lower very low frequency (VLF) HRV, and (2) that lower VLF would be related to greater school burnout independently of LF HRV. Hierarchical multiple regression analyzes showed that school burnout was significantly related to elevated ambulatory BP (systolic and diastolic) and HRV markers of increased cardiac sympathovagal tone. These findings support the hypotheses and suggest that school burnout might be implicated in the development of pre-hypertension or early cardiovascular disease. Study limitations and the need for future longitudinal research are discussed.
Abstract

Angiogenesis, the complex process of formation of new blood vessels from pre-existing blood vessels, which involves the participation of several pro- and anti-angiogenic factors, is implicated in many physiological and pathological conditions. Nanoparticle-based anti-angiogenic activity at the tumour tissue, harnessed by the Enhanced Permeability and Retention Effect (EPR effect), could potentially become a breakthrough therapy to halt tumour progression. Herein, we evaluate the anti-angiogenic effect of ZnWO4 nanoparticles (NPs). The nanoparticles were obtained by microwave-assisted hydrothermal synthesis (MAHS) at 120 °C for 60 min and were structurally characterised by X-ray diffraction (XRD) and micro-Raman (MR) spectroscopy. The mean size and polydispersity index were estimated by Zeta potential analysis. The XRD analysis revealed structural organisation at a long-range order, with an average crystallite size of around 3.67 nm, while MR revealed short-range order for ZnWO4. The anti-angiogenic potential of zinc tungstate nanoparticles was investigated through the chorioallantoic membrane assay (CAM) using fertilised chicken eggs. We demonstrate, in an unprecedented way, that nanocrystalline ZnWO4 NPs obtained by MAHS, at low reaction temperatures, showed excellent anti-angiogenic properties even at low concentrations. The ZnWO4 NPs were further evaluated for its cytotoxicity in vitro.
Abstract

Introduction: Advanced urothelial cancer patients had limited therapeutic options following failure of platinum-based chemotherapy. The recognition that anti-PD1/PDL1 immune checkpoint inhibitors lead to dramatic and durable responses in a subset of patients has transformed the therapeutic landscape of these cancers. Since May 2016, five agents targeting this pathway have been approved by the US FDA, including the PD-1 inhibitor nivolumab.

Areas covered: The purpose of this paper was to review the safety, activity and efficacy of nivolumab, an anti-PD1 checkpoint inhibitor for the treatment of locally-advanced or metastatic urothelial cancers. Future therapeutic perspectives were also discussed.

Expert commentary: Nivolumab is one of five anti-PD1/PDL1 checkpoint inhibitors approved for treatment of advanced urothelial cancers. While durable responses can be observed, only 15 – 24% of patients are likely to respond. To date, there are no validated biomarkers, including PDL1 expression, which might accurately identify patients who are likely to respond. Many different biomarkers are currently under active investigation. Future direction for therapeutic development is likely to involve combination therapies with PD1/PDL1 agent as the therapeutic backbone.
Title: SATB1 is a Novel Molecular Target for Cancer Therapy

Author: Meng Ding, Jun Pan, Zhicheng Guo, Quhe Liu, Chunhua Yang & Lijun Mao

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Abstract

The special AT-rich sequence binding-protein1 (SATB1) attracts excessive attention due to its high expression in a variety of malignancies. SATB1 reprograms chromatin and transcription profiles to promote tumor cell growth and invasion and inhibit apoptosis, leading to tumor progression and metastasis. Consistently, silencing SATB1 with small interfering RNA inhibits the growth and invasion of some kinds of tumors. In this review, we highlight recent progress in our understanding of the role of SATB1 as global regulator of gene expression during cancer development, and evaluate the potential of SATB1 as a molecular therapeutic target for cancers with aberrant SATB1 expression.

Database

Tylor & Francis Online Journal
Abstract

Background
The built environment influences behaviour, like physical activity, diet and sleep, which affects the risk of type 2 diabetes mellitus (T2DM). This study systematically reviewed and meta-analysed evidence on the association between built environmental characteristics related to lifestyle behaviour and T2DM risk/prevalence, worldwide.

Methods
We systematically searched PubMed, EMBASE.com and Web of Science from their inception to 6 June 2017. Studies were included with adult populations (>18 years), T2DM or glycaemic markers as outcomes, and physical activity and/or food environment and/or residential noise as independent variables. We excluded studies of specific subsamples of the population, that focused on built environmental characteristics that directly affect the cardiovascular system, that performed prediction analyses and that do not report original research. Data appraisal and extraction were based on published reports (PROSPERO-ID: CRD42016035663).

Results
From 11,279 studies, 109 were eligible and 40 were meta-analysed. Living in an urban residence was associated with higher T2DM risk/prevalence (n = 19, odds ratio (OR) = 1.40; 95% CI, 1.2–1.6; I² = 83%) compared to living in a rural residence. Higher neighbourhood walkability was associated with lower T2DM risk/prevalence (n = 8, OR = 0.79; 95% CI, 0.7–0.9; I² = 92%) and more green space tended to be associated with lower T2DM risk/prevalence (n = 6, OR = 0.90; 95% CI, 0.8–1.0; I² = 95%). No convincing evidence was found of an association between food environment with T2DM risk/prevalence.

Conclusions
An important strength of the study was the comprehensive overview of the literature, but our study was limited by the conclusion of mainly cross-sectional studies. In addition to other positive consequences of walkability and access to green space, these environmental characteristics may also contribute to T2DM prevention. These results may be relevant for infrastructure planning.