Breast Cancer Literature Update
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Deep-belief network for predicting potential miRNA-disease associations.

Related Articles

Deep-belief network for predicting potential miRNA-disease associations.

Brief Bioinform. 2020 Sep 01;

Authors: Chen X, Li TH, Zhao Y, Wang CC, Zhu CC

Abstract

MicroRNA (miRNA) plays an important role in the occurrence, development, diagnosis and treatment of diseases. More and more researchers begin to pay attention to the relationship between miRNA and disease. Compared with traditional biological experiments, computational method of integrating heterogeneous biological data to predict potential associations can effectively save time and cost. Considering the limitations of the previous computational models, we developed the model of deep-belief network for miRNA-disease association prediction (DBNMDA). We constructed feature vectors to pre-train restricted Boltzmann machines for all miRNA-disease pairs and applied positive samples and the same number of selected negative samples to fine-tune DBN to obtain the final predicted scores. Compared with the previous supervised models that only use pairs with known label for training, DBNMDA innovatively utilizes the information of all miRNA-disease pairs during the pre-training process. This step could reduce the impact of too few known associations on prediction accuracy to some extent. DBNMDA achieves the AUC of 0.9104 based on global leave-one-out cross validation (LOOCV), the AUC of 0.8232 based on local LOOCV and the average AUC of 0.9048 ± 0.0026 based on 5-fold cross validation. These AUCs are better than other previous models. In addition, three different types of case studies for three diseases were implemented to demonstrate the accuracy of DBNMDA. As a result, 84% (breast neoplasms), 100% (lung neoplasms) and 88% (esophageal neoplasms) of the top 50 predicted miRNAs were verified by recent literature. Therefore, we could conclude that DBNMDA is an effective method to predict potential miRNA-disease associations.

PMID: 32866969 [PubMed — as supplied by publisher]

Curcumin inhibits proteasome activity in triple-negative breast cancer cells through regulating p300/miR-142-3p/PSMB5 axis.

Related Articles

Curcumin inhibits proteasome activity in triple-negative breast cancer cells through regulating p300/miR-142-3p/PSMB5 axis.

Phytomedicine. 2020 Aug 25;78:153312

Authors: Liu L, Fu Y, Zheng Y, Ma M, Wang C

Abstract

BACKGROUND: Curcumin functions as a proteasome inhibitor. However, the molecular mechanisms behind this action need more detailed explanations.

PURPOSE: This study aimed to investigate the inhibitory effect of curcumin on 20S proteasome activity and to elucidate its exact mechanism in triple-negative breast cancer (TNBC) MDA-MB-231 cells.

METHODS: Proteosomal peptidase activities were assayed using synthetic fluorogenic peptide substrates. Knockdown or overexpression of microRNA (miRNA or miR) or protein was used to investigate its functional effect on downstream cellular processes. BrdU (5-bromo-2′-deoxyuridine) assay was performed to identify cell proliferation. Western blot and quantitative real-time PCR(qRT-PCR) were carried out to determine protein abundance and miRNA expression, respectively. Correlations between protein expressions, miRNA levels, and proteasome activities were analyzed in TNBC tissues. Xenograft tumor model was performed to observe the in vivo effect of curcumin on 20S proteasome activity.

RESULTS: Curcumin significantly reduced PSMB5 protein levels, accompanied with a reduction in the chymotrypsin-like (CT-l) activity of proteasome 20S core. Loss of PSMB5 markedly inhibited the CT-l activity of 20S proteasome. Furthermore, curcumin treatment significantly elevated miR-142-3p expression. PSMB5 was a direct target of miR-142-3p and its protein levels were negatively regulated by miR-142-3p. Moreover, histone acetyltransferase p300 suppressed miR-142-3p expression. Overexpression of p300 mitigated the promotive effect of curcumin on miR-142-3p expression. The correlations among p300 abundances, miR-142-3p levels, PSMB5 expressions, and the CT-l activities of 20S proteasome were evidenced in TNBC tissues. In
addition, loss of p300 and PSMB5 reduced cell proliferation. Inhibition of miR-142-3p significantly attenuated the inhibitory impact of curcumin on cell proliferation. These curcumin-induced changes on p300, miR-142-3p, PSMB5, and 20S proteasome activity were further confirmed in in vivo solid tumor model. CONCLUSION: These findings demonstrated that curcumin suppressed p300/miR-142-3p/PSMB5 axis leading to the inhibition of the CT-I activity of 20S proteasome. These results provide a novel and alternative explanation for the inhibitory effect of curcumin on proteasome activity and also raised potential therapeutic targets for TNBC treatment.

PMID: 32866906 [PubMed — as supplied by publisher]

Epidemiology of male breast cancer.

Related Articles

Epidemiology of male breast cancer.

Breast. 2020 Aug 22;54:8–14
Authors: Konduri S, Singh M, Bobustuc G, Rovin R, Kassam A

Abstract
BACKGROUND: Due to its rarity, few studies have characterized the epidemiology of male breast cancer. The purpose of this study was to determine survival and risk factors for male breast cancer in a large U.S.

POPULATION:
METHODS: In this study, 19,795 male patients with breast cancer were identified from the National Cancer Database (2004–2014). Patient demographics, tumor characteristics and treatments were analyzed by using descriptive statistics. We used multivariate Cox regression and Kaplan Meier analysis.

RESULTS: Over 10 years, the incidence of male breast cancer increased from 7.2% to 10.3%, while mortality decreased from 11% to 3.8%. Socioeconomic factors predicting mortality included income medium, and high vs low (HR = 0.78; 0.68), private vs no insurance (HR = 0.73) and the academic research facility vs community cancer center (HR = 0.79). Significant predictors of all-cause mortality included age (HR = 1.04), tumor size (HR = 1.01), hormone receptor expression (HR = 0.8) and cancer stage I vs II, III, and IV at the time of diagnosis (HR = 1.5, 2.7, 4.4, 9.9 respectively). Other predictors of mortality include surgery (HR = 0.4), chemotherapy (HR = 0.8), radiation (HR = 0.8), and hormonal therapy (HR=0.8). CONCLUSIONS: Socioeconomic factors, cancer stage, tumor characteristics (size and grade), and high Charlson-Dayo score contributed to higher mortality among male patients diagnosed with breast cancer. Surgery was most effective, followed by radiation, chemotherapy, and hormonal therapy. Patients with positive ER or PR expression demonstrated better survival. Adjusting for socioeconomic factors, biomarker identification and timely, appropriately chosen treatment are likely to reduce the risk for mortality.

PMID: 32866903 [PubMed — as supplied by publisher]
An FDA Analysis of Survival Outcomes Comparing an Adjuvant Paclitaxel and Trastuzumab Trial to an External Control from Historical Clinical Trials.

Related Articles
An FDA Analysis of Survival Outcomes Comparing an Adjuvant Paclitaxel and Trastuzumab Trial to an External Control from Historical Clinical Trials.
Ann Oncol. 2020 Aug 28;:

Abstract
BACKGROUND: Although the Adjuvant Paclitaxel and Trastuzumab (APT) trial has been adopted clinically, single-arm trials have limitations, and interest remains whether these patients with small node-negative HER2-positive early breast cancer (EBC) would benefit from more intensive chemotherapy. This analysis explored whether external controls can contextualize single-arm studies to add to clinical decision-making in the use of de-escalated therapy in patients with low-risk HER2-positive EBC.

PATIENTS AND METHODS: Patient-level data from five randomized trials supporting drug approval in adjuvant HER2-positive EBC were pooled, and patients with low-risk HER2-positive EBC were selected (n=1770). Patients treated concurrently with trastuzumab and either anthracycline/cyclophosphamide/taxane (ACTH) or taxane/carboplatin (TCH) (n=1366) were matched (1:1) to patients treated with paclitaxel and trastuzumab (TH) in the APT trial (n=406) using propensity scores. Patients treated with anthracycline/cyclophosphamide/taxane (ACT) (n=374) were also matched (1:1) to those treated with TH. Propensity score were estimated using covariates of age, tumor stage, ER status, PR status, and histological grade.

RESULTS: After matching, the estimated probabilities of invasive disease-free survival (iDFS) at 3 and 5 years were 98.6% and 96.5% in the TH arm, and 96.6% and 92.9% in the ACTH/TCH arm. The estimated probabilities of overall survival (OS) at 3 and 5 years was 99.7% and 99.3% in the TH arm, and 99.0% and 97.4% in the ACTH/TCH arm, respectively. Comparing TH arm to ACT arm in the matched sample, the estimated difference in iDFS was 7.5% (TH 98.8% and ACT 91.3%) at 3 years and 12.6% (TH 96.1% and ACT 83.5%) at 5 years. The estimated difference in OS was 2.6% (TH 100% and ACT 97.4%) at 3 years, and 5.3% (TH 99.3% and ACT 94%) at 5 years.

CONCLUSIONS: Our analyses suggest that patients’ outcomes in both arms were in general similar, thus providing additional reassurance regarding de-escalation of therapy.

PMID: 32866522 [PubMed — as supplied by publisher]

Important role of annexin A2 (ANXA2) in new blood vessel development in vivo and human triple negative breast cancer (TNBC) growth.

Related Articles
Important role of annexin A2 (ANXA2) in new blood vessel development in vivo and human triple negative breast cancer (TNBC) growth.
Exp Mol Pathol. 2020 Aug 28;:104523
Authors: Sharma MC, Jain D

Abstract
Development of new blood vessels in the tumor microenvironment is an essential component of tumor progression during which newly formed blood vessels nourish tumor cells and play a critical role in rapid tumor growth, invasion and metastasis. Nevertheless, how tumor cells develop new blood vessels in the TME have been enigmatic. Previously, we have shown specific overexpression of ANX A2 in TNBC cells regulates plasmin generation and suspected a role in neoangiogenesis. In this report, we used Matrigel plug model of in vivo angiogenesis and confirmed its role in new blood vessel development. Next, we tested if blocking of ANX A2 in aggressive human breast TME can inhibit angiogenesis and tumor growth in vivo. We showed that aggressive human breast tumor cells growing in nude mice can induce intense neoangiogenesis in the tumor mass. Blocking of ANXA2 significantly inhibited neoangiogenesis and resulted in inhibition of tumor growth. Interestingly, we identified that blocking of ANXA2 significantly inhibited tyrosine phosphorylation (Tyr-P) of ANXA2 implying its involve in tyrosine signaling pathway and suggesting it may regulate angiogenesis. Taken together, our experimental evidence suggests that ANX A2 could be a novel strategy for disruption of tyrosine signaling and inhibition of neoangiogenesis in breast tumor.

PMID: 32866522 [PubMed — as supplied by publisher]

Rac1 repression reverses chemoresistance by targeting tumor metabolism.

Related Articles
Rac1 repression reverses chemoresistance by targeting tumor metabolism.
Cancer Biol Ther. 2020 Aug 31;:1–3
Authors: Ganapathy-Kanniappan S

Abstract
Tumor metabolism is exemplified by the increased rate of glucose utilization, a biochemical signature of cancer cells. The enhanced glucose hydrolysis enabled by the augmentation of glycolytic flux
and the pentose phosphate pathway (PPP) plays a pivotal role in the growth and survival of neoplastic cells. In a recent report, it has been shown that in human breast cancer the GTP binding protein, Rac1 enables resistance to therapy, particularly against the DNA-damaging therapeutics. Significantly, the findings demonstrate that Rac1-dependent chemoresistance involves the upregulation of glycolytic flux as well as PPP. Using multiple approaches, the study demonstrates that disruption of Rac1 activity sensitizes cancer cells to DNA-damaging agents. More importantly, the data uncover a previously unknown PPP regulatory role of Rac1 in breast cancer. Finally, the authors also show the effectiveness and the feasibility of in vivo targeting of Rac1 to enhance the chemosensitivity of breast cancer. This elegant report provokes scientific curiosity to expand our understanding of the intricacies of the role and regulation of Rac1 in cancer.

PMID: 32866423 [PubMed — as supplied by publisher]

Gene panel screening for insight towards breast cancer susceptibility in different ethnicities.

Related Articles

Gene panel screening for insight towards breast cancer susceptibility in different ethnicities.


Authors: Bishop MR, Omeler-Fenaud SM, Huskey ALW, Merner ND

Abstract

African American breast cancer genetics is less understood compared to European American breast cancer susceptibility. Despite the many advantages of gene panel screening, studies investigating African American inherited breast cancer risk and comparing variant contributions between ethnicities are infrequent. Thus, 97 breast cancer-affected individuals of African and European descent from the Alabama Hereditary Cancer Cohort were screened using the research-based gene-panel, B.O.P. (Breast, Ovarian, and Prostate cancer). Upon sequencing and bioinformatic processing, rare coding variants in 14 cancer susceptibility genes were categorized according to the American College of Medical Genetics guidelines and compared between ethnicities. Overall, 107 different variants were identified, the majority of which were benign/likely benign. A pathogenic/likely pathogenic variant was detected in 8.6% and 6.5% of African American and European American cases, respectively, which was not statistically significant. However, African Americans were more likely to have at least one variant of uncertain significance (VUS; p-value 0.0066); they also had significantly more VUSs in BRCA1/2 compared to European Americans (p-value 0.015). Additionally, 51.4% of African Americans and 32.3% of European Americans harbored multiple rare variants, and African Americans were more likely to have at least one VUS and one benign/likely benign variant (p-value 0.032), as well as multiple benign/likely benign variants (p-value 0.089). Moreover, of the 15 variants detected in multiple breast cancer cases, ATM c.2289T>C (p.F763L), a VUS, along with two likely benign variants, BRCA2 c.2926 2927delinsAT (p.S976I) and RAD51D c.251T>A (p.L84H), were determined to be associated with African American breast cancer risk when compared to ethnic-specific controls. Ultimately, B.O.P. screening provides essential insight towards the variant contributions in clinically relevant cancer susceptibility genes and differences between ethnicities, stressing the need for future research to elucidate inherited breast cancer risk.

PMID: 32866190 [PubMed — as supplied by publisher]

LMTK3 promotes tumorigenesis in bladder cancer via the ERK/MAPK pathway.

Related Articles

LMTK3 promotes tumorigenesis in bladder cancer via the ERK/MAPK pathway.

FEBS Open Bio. 2020 Aug 31;

Authors: Jiang T, Lu X, Yang F, Wang M, Yang H, Xing N

Abstract

Lemur tyrosine kinase 3 (LMTK3) is a key member of the serine/threonine tyrosine kinase family. It plays an important role in breast cancer tumorigenesis and progression. However, its biological role in bladder cancer remains elusive. In this study, we demonstrated that LMTK3 was overexpressed in bladder cancer, and was positively correlated with bladder cancer malignancy. High LMTK3 expression predicted poor overall survival. Knockdown of LMTK3 in bladder cancer cells triggered cell cycle arrest at G2/M phase, suppressed cell growth and induced cell apoptosis in bladder cancer cells. Furthermore, transwell assays revealed that reduction of LMTK3 decreased cell migration by regulating the epithelial-to-mesenchymal transition (EMT) pathway. Conversely, LKTM3 overexpression was shown to promote proliferation and migration of bladder cancer cells. We assessed phosphorylation of MEK and ERK1/2 in bladder cancer cells depleted of LMTK3 and demonstrated a reduced phosphorylation status compared to the control group. Using a MAPK signaling-specific inhibitor, U0126, we could rescue the promotion of proliferation and migration of bladder cancer cells. In conclusion, we extend the status of LMTK3 as an oncogene in bladder cancer and provide evidence for its function via the activation of the ERK/MAPK pathway. Thus, targeting LMTK3 may hold potential as a diagnostic and prognostic biomarker and as a possible future treatment for bladder cancer.

PMID: 32865871 [PubMed — as supplied by publisher]

Related Articles


Proteomics. 2020 Aug 31:e2000135

Abstract
Estrogen Receptor alpha (ERα) is a ligand-inducible transcription factor which mediates estrogen actions in hormone-responsive tumors and is targeted by effective anticancer therapies based on the ERα antagonist ligands Selective Estrogen Receptor Modulators (SERMs, such as Tamoxifen/TAM) or Disruptors (SERDs, such as Fulvestrant/ICI). Despite its importance for cancer therapy, including acquired resistance to endocrine therapy, the molecular basis of ERα response to different ligands is not fully known to date. Interaction proteomics shows great potential to identify and characterize molecular mechanisms of disease based on physical and functional protein-protein interaction networks. We applied here Tandem Affinity Purification coupled to mass spectrometry for mapping in hormone-responsive breast cancer cells nuclei the ERα interactomes induced by each of the two classes of antiestrogens. The results provide new insights on the molecular bases for antiestrogen-mediated control of ERα function and reveal new potential ways to overcome endocrine therapy resistance in cancer. The mass spectrometry proteomics data have been deposited to the ProteomeXchange Consortium (http://proteomecentral.proteomexchange.org) via the PRIDE partner repository with dataset identifier PXD018709. This article is protected by copyright. All rights reserved.

PMID: 32865868 [PubMed — as supplied by publisher]

Study Designs in Multi-arm Trials for Breast Cancer: A Systematic Literature Review of Major Journals.

Related Articles

Study Designs in Multi-arm Trials for Breast Cancer: A Systematic Literature Review of Major Journals.

Ther Innov Regul Sci. 2020 Sep;54(5):1185–1191
Authors: Nomura S, Miyauchi Y, Ajisawa Y, Isogaya K, Sozu T

Abstract
BACKGROUND: Several articles showed that statistical efficiency of multi-arm randomized clinical trials (RCTs) is much better than conventional two-arm RCTs. Multi-arm RCTs attract interest mainly when the experimental treatment regimen is not optimized or several pipelines under development exist. Breast cancer is a possible candidate disease. Our aim was to elucidate the current study designs and multiplicity adjustment methods in multi-arm RCTs.

METHODS: A search of the PubMed database revealed 468 articles on breast cancer RCTs published from 2010 to 2016. Information on study designs and analysis methods was collected from 4 major journals.

RESULTS: A total of 202 RCTs were selected, 48 were multi-arm and 29 were three-arm RCTs. In two of the target journals, multi-arm RCTs have been increasingly reported since 2013. Compared with two-arm RCTs, three-arm RCTs were conducted in neoadjuvant settings (7.7% vs 33.3%). The number of trials performed in perioperative settings was 46 in two-arm and 15 in three-arm RCTs. Of these, the proportion of

Receiver operating characteristic curves and confidence bands for support vector machines.

Related Articles

Receiver operating characteristic curves and confidence bands for support vector machines.

Biometrics. 2020 Aug 31:
Authors: Luckett DJ, Laber EB, El-Kamary SS, Fan C, Jhaveri R, Perou CM, Shebl FM, Kosorok MR

Abstract
Many problems that appear in biomedical decision making, such as diagnosing disease and predicting response to treatment, can be expressed as binary classification problems. The support vector machine (SVM) is a popular classification technique that is robust to model misspecification and effectively handles high-dimensional data. The relative costs of false positives and false negatives can vary across application domains. The receiving operating characteristic (ROC) curve provides a visual representation of the trade-off between these two types of errors. Because the SVM does not produce a predicted probability, an ROC curve cannot be constructed in the traditional way of thresholding a predicted probability. However, a sequence of weighted SVMs can be used to construct an ROC curve. While ROC curves constructed using weighted SVMs have great potential for allowing ROC curves analyses that cannot be done by thresholding predicted probabilities, their theoretical properties have heretofore been underdeveloped. We propose a method for constructing confidence bands for the SVM ROC curve and provide the theoretical justification for the SVM ROC curve by showing that the risk function of the estimated decision rule is uniformly consistent across the weight parameter. We demonstrate the proposed confidence band method using simulation studies. We present a predictive model for treatment response in breast cancer as an illustrative example.

PMID: 32865820 [PubMed — as supplied by publisher]
industry-sponsored trials in two-arm and three-arm RCTs was 26.1% and 53.3%, respectively. Shared control designs (SCDs) which randomized to a common control arm and multiple experimental arms comprised 54.2% of 48 multi-arm RCTs. For SCDs, detailed information on multiplicity adjustment methods was seldom reported. The Bonferroni adjustment method together with alpha-spending functions was commonly used.

CONCLUSION: Breast cancer multi-arm RCTs have been increasingly reported. The majority of multi-arm RCTs are industry-sponsored trials using SCDs in neoadjuvant settings. Detailed description about multiplicity adjustment methods is required for multi-arm RCTs.

PMID: 32865800 [PubMed — as supplied by publisher]

miR-484 suppresses endocrine therapy-resistant cells by inhibiting KLF4-induced cancer stem cells in estrogen receptor-positive cancers.

miR-484 suppresses endocrine therapy-resistant cells by inhibiting KLF4-induced cancer stem cells in estrogen receptor-positive cancers.

Breast Cancer. 2020 Aug 31;:
Authors: Wei Y, Li H, Qu Q
Abstract
Endocrine therapy (mainly anti-estrogen therapy) is the mainstay of treatment for estrogen receptor (ER) positive breast cancer (BCa). However, approximately one-third of BCa patients who receive endocrine therapy may develop resistance. The detailed mechanism is still unclear. MCF7 and T-47D cells were treated with ERα antagonist tamoxifen for 2 months until they became tamoxifen-resistant. qPCR was used to detect the stem markers like CD44, OCT4 and SOX2. Flow cytometry and sphere formation were performed to test the stemness. Cell growth and invasiveness were measured by MTS assay, xenograft mouse model, and invasion assay. We found that tamoxifen resistant BCa cells acquired certain malignant phenotypes, such as higher expression of KLF4, stemness and enhanced invasiveness. Furthermore, miR-484 was found to act as a tumor suppressor and directly downregulated KLF4. KLF4-induced cancer stem cell (CSCs) contributes to anti-ER therapy resistant and is a potential target in endocrine therapy-resistant cancers.

PMID: 32865695 [PubMed — as supplied by publisher]

 Wikstromol from Wikstroemia indica induces apoptosis and suppresses migration of MDA-MB-231 cells via inhibiting PI3K/Akt pathway.

wikstromol from Wikstroemia indica induces apoptosis and suppresses migration of MDA-MB-231 cells via inhibiting PI3K/Akt pathway.

J Nat Med. 2020 Aug 31;:
Authors: Yao H, Zhang X, Zhang N, Li J, Li Y, Wei Q
Abstract
Triple negative breast cancer (TNBC) is the most severe type of breast cancer due to the lack of specific targets and rapid metastasis, which result in the poor prognosis. Recently, phosphatidylinositol 3-kinase (PI3K)/Akt pathway has emerged as a potential target for the treatment of TNBC. In our research interest to discover phytochemicals targeting TNBC, we have investigated wikstromol from Wikstroemia indica using the human TNBC MDA-MB-231 cells. The results showed wikstromol at 10 μM inhibited cell growth of MDA-MB-231 cells which was confirmed by MTT assay. Further DAPI staining has revealed wikstromol at 0.1 μM induced apoptosis of cancer cells, which was associated with the activation of caspase-3 following down-regulation of Bcl-2 as well as up-regulation of Bax, cleaved PARP and phosphorylated p53. Meanwhile, it was observed at 0.1 μM wikstromol suppressed the migration of the cancer cells via decreasing transcription of NF-κB and reducing activity and secretion of downstream MMP-9. In addition, p-PI3K and p-Akt were down-regulated in MDA-MB-231 cells in the presence of wikstromol at 0.1 μM, which indicated inactivation of PI3K/Akt pathway was involved in these inhibitory effects.

PMID: 32865667 [PubMed — as supplied by publisher]

Protein Kinase C Alpha (PKCα) overexpression leads to a better response to retinoid acid therapy through Retinoic Acid Receptor Beta (RARβ) activation in mammary cancer cells.

Protein Kinase C Alpha (PKCα) overexpression leads to a better response to retinoid acid therapy through Retinoic Acid Receptor Beta (RARβ) activation in mammary cancer cells.

PMID: 32865667 [PubMed — as supplied by publisher]
Bridge, which stimulates BATs to release cytotoxic molecules, engagement with tumor cells via the bispecific antibody (BiAb) solid tumors. The cytotoxic activity of BATs occurs upon Adoptive transfer of Bispecific antibody Armed activated T cells.

Methods: PKCa overexpression was achieved by stable transfection and confirmed by western blot. Transfected PKC functionality was determined by nuclear translocation-induction and confocal microscopy. In vitro proliferation was evaluated by cell counting and cell cycle distribution was analyzed by flow cytometry. In vivo studies were performed to evaluate orthotopic tumor growth and experimental lung colonization. Retinoic acid response elements (RARE) and AP1 sites-dependent activity was studied by gene reporter assays and retinoic acid receptors (RARs) were measured by RT-qPCR.

Results: Our findings suggest that high PKCa levels improve the differentiation response to ATRA in a RAR signaling-dependent manner. Moreover, RARβ expression appears to be critical to induce ATRA sensitization, throughout AP1 trans-repression.

Conclusion: Here we propose that retinoids could lead a highly personalized anticancer treatment, bringing benefits to patients with aggressive breast tumors resulting from high PKCa expression but, an adequate expression of the RARβ receptor is required to ensure the effect on this process.

PMID: 32865619 [PubMed — as supplied by publisher]

Anti-tumor and immune modulating activity of T cell induced tumor-targeting effectors (TITE).

Abstract

Purpose: Retinoids have proved to be effective for hematologic malignancies treatment but till nowadays, their use as single agent for the solid tumor’s management is still controversial. All-trans retinoic acid (ATRA), the main active metabolite of vitamin A, exerts non-genomic interactions with different members of the protein kinase C (PKC) family, recognized modulators of different tumor progression pathways. To determine whether a group of patients could become benefited employing a retinoid therapy, in this study we have evaluated whether PKCa expression (a poor prognosis marker in breast cancer) could sensitize mammary cells to ATRA treatment.

Methods: PKCa overexpression was achieved by stable transfection and confirmed by western blot. Transfected PKC functionality was determined by nuclear translocation-induction and confocal microscopy. In vitro proliferation was evaluated by cell counting and cell cycle distribution was analyzed by flow cytometry. In vivo studies were performed to evaluate orthotopic tumor growth and experimental lung colonization. Retinoic acid response elements (RARE) and AP1 sites-dependent activity was studied by gene reporter assays and retinoic acid receptors (RARs) were measured by RT-qPCR.

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Conclusion: Here we propose that retinoids could lead a highly personalized anticancer treatment, bringing benefits to patients with aggressive breast tumors resulting from high PKCa expression but, an adequate expression of the RARβ receptor is required to ensure the effect on this process.

PMID: 32865619 [PubMed — as supplied by publisher]

Machine Learning Algorithms for Early Detection of Bone Metastases in an Experimental Rat Model.

Abstract

Machine learning (ML) algorithms permit the integration of different features into a model to perform classification or regression tasks with an accuracy exceeding its constituents. This protocol describes the development of an ML algorithm to predict the growth of breast cancer bone macrometastases in a rat model before any abnormalities are observable with standard imaging methods. Such an algorithm can facilitate the detection of early metastatic disease (i.e., micrometastasis) that is regularly missed during staging examinations. The applied metastasis model is site-specific, meaning that the rats develop metastases exclusively in their right hind leg. The model’s tumor-take rate is 60%-80%, with macrometastases becoming visible in magnetic resonance imaging (MRI) and positron emission tomography/computed tomography (PET/CT) in a subset of animals 30 days after induction, whereas a second subset of animals exhibit no tumor growth. Starting from image examinations acquired at an earlier time point, this protocol describes the extraction of features that indicate tissue vascularization detected by MRI, glucose metabolism by PET/CT, and the subsequent determination of the most relevant features for the prediction of macrometastatic disease. These features are then fed into a model-averaged neural network (avNNNet) to classify the animals into one of two groups: one that will develop metastases and the other that will not develop any tumors. The protocol also describes the calculation of standard diagnostic parameters, such as overall accuracy, sensitivity, specificity, negative/positive predictive values.
likelihood ratios, and the development of a receiver operating characteristic. An advantage of the proposed protocol is its flexibility, as it can be easily adapted to train a plethora of different ML algorithms with adjustable combinations of an unlimited number of features. Moreover, it can be used to analyze different problems in oncology, infection, and inflammation.

PMID: 32865533 [PubMed — as supplied by publisher]

Prohibitin participates in the HIRA complex to promote cell metastasis in breast cancer cell lines.

Related Articles

Prohibitin participates in the HIRA complex to promote cell metastasis in breast cancer cell lines.
FEBS Open Bio. 2020 Aug 31;
Authors: Huang X, Liu J, Ma Q

Abstract
Prohibitin (PHB) is a highly conserved, ubiquitously expressed, multifunctional protein with a well-characterized function as a chaperone stabilizing mitochondrial proteins. Recently it was reported that nuclear PHB participates in HIRA chaperone complexes and regulates downstream gene expression via cell cycle independent deposition of H3.3 into DNA. However, the role of PHB in cancer progression remains controversial with conflicting reports in the literature, perhaps due to its cell-type dependent subcellular localization. Here, we report that the increased expression of nuclear PHB is positively correlated with metastasis of breast cancer cell lines. We showed PHB participates in the HIRA complex by interacting with HIRA through the linker region of the PHB domain and stabilizes all components of the HIRA complex in breast cancer. Overexpression of nuclear PHB resulted in a higher enrichment of histone H3.3 deposited by the HIRA complex at the promoters of mesenchymal markers. This coincided with an increased gene expression level of these markers, and induced EMT in breast cancer. Overall, these molecular and structural mechanisms suggest that nuclear PHB could hold promise as a potential target for cancer therapy.

PMID: 32865342 [PubMed — as supplied by publisher]

Biosafety procedures for handling intraoperative surgical samples during COVID-19 pandemic: an Italian pathology laboratory experience.

Related Articles

Biosafety procedures for handling intraoperative surgical samples during COVID-19 pandemic: an Italian pathology laboratory experience.
Pathologica. 2020 Jul 28;

Abstract
Up to now, Italy is one of the European centers with the most active Coronavirus cases with 233,836 positive cases and 33,601 total deaths as of June 3rd. During this pandemic and dramatic emergency, Italian hospitals had also to face neoplastic pathologies, that still afflict the Italian population, requiring urgent surgical and oncological treatment. In our Cancer Center Hospital, the high volume of surgical procedures have demanded an equally high volume of intraoperative pathological examinations, but also posed an additional major challenge for the safety of the staff involved. The current commentary reports our experience in the past two months (since March 9th) for a total of 1271 frozen exams from 893 suspect COVID-19 patients (31 confirmed).

PMID: 32865190 [PubMed — as supplied by publisher]

Clinical efficacy of anesthesia with intensive care nursing in attenuating postoperative complications in patients with breast cancer.

Related Articles

Clinical efficacy of anesthesia with intensive care nursing in attenuating postoperative complications in patients with breast cancer.

Abstract
OBJECTIVE: Complications frequently occur in patients with breast cancer after surgery. Anesthesia nursing plays an important role in decreasing complications for such patients. Thus, this study investigated the effects of anesthesia with intensive care nursing (AICN) on complication rates in patients with breast cancer after
METHODS: Eighty-two patients with breast cancer were recruited in this study. Complications were compared between the anesthesia with usual nursing care (AUCN) and AICN groups. RESULTS: The results demonstrated that AICN decreased the rates of incision infection, drug extravasation, and catheter exposure, as well as pain and inflammation scores, compared with the findings in the AUCN group. AICN improved the time to orientation and decreased the incidence of nausea, anxiety, depression, and vomiting versus AUCN. In addition, AICN shortened the time to awakening after anesthesia compared with the effects of AUCN. Furthermore, AICN shortened hospital stay and increased survival rates. Notably, AICN improved health-related quality of life as measured using the EORTC QLQ-C30 questionnaire. CONCLUSION: AICN provided more benefits and better postoperative outcomes than AUCN, suggesting its utility for minimizing complications in patients with breast cancer after surgery.

PMID: 32865094 [PubMed — in process]

Synchronous papillary thyroid carcinoma and breast ductal carcinoma.

Related Articles

Synchronous papillary thyroid carcinoma and breast ductal carcinoma.

Authors: Kong H, Chen J, Tang SC

Abstract

A 48-year-old woman was admitted to our hospital with a lump in her left breast. She was diagnosed with synchronous papillary thyroid carcinoma and breast ductal carcinoma. The patient underwent four cycles of neoadjuvant chemotherapy with epirubicin and cyclophosphamide, and one cycle of docetaxel. She then underwent left breast mastectomy and radical resection of thyroid cancer (total thyroidectomy and bilateral central group [levels VI and VII] lymph node dissection) at the same time. She was administered three cycles of chemotherapy with docetaxel and radiotherapy. The patient had no metastasis in the follow-up period. A literature search was performed to characterize the epidemiology, etiology, management, and prognosis of this condition. We speculate that hormone treatment could be a probable pathogenesis of synchronous breast and thyroid cancers.

PMID: 32865067 [PubMed — in process]

Modulating barriers of tumor microenvironment through nanocarrier systems for improved cancer immunotherapy: a review of current status and future perspective.

Related Articles

Modulating barriers of tumor microenvironment through nanocarrier systems for improved cancer immunotherapy: a review of current status and future perspective.

Drug Deliv. 2020 Dec;27(1):1248–1262

Abstract

Cancer immunotherapy suppresses and destroys tumors by re-activating and sustaining the tumor-immune process, and thus improving the immune response of the body to the tumor. Immunotherapeutic strategies are showing promising results in pre-clinical and clinical trials, however, tumor microenvironment (TME) is extremely immunosuppressive. Thus, their translation from labs to clinics still faces issues. Recently, nanomaterial-based strategies have been developed to modulate the TME for robust immunotherapeutic responses. The combination of nanotechnology with immunotherapy potentiates the effectiveness of immunotherapy by increasing delivery and retention, and by reducing immunomodulation toxicity. This review aims to highlight the barriers offered by TME for hindering the efficiency of immunotherapy for cancer treatment. Next, we highlight various nano-carriers based strategies for modulating those barriers for achieving better therapeutic efficacy of cancer immunotherapy with higher safety. This review will add to the body of scientific knowledge and will be a good reference material for academia and industries.

PMID: 32865029 [PubMed — in process]

Computational Radiology in Breast Cancer Screening and Diagnosis Using Artificial Intelligence.

Related Articles

Computational Radiology in Breast Cancer Screening and Diagnosis Using Artificial Intelligence.

Can Assoc Radiol J. 2020 Aug 31;846537120949974
Authors: Tran WT, Sadeghi-Naini A, Lu FI, Gandhi S, Meti N, Brackstone M, Rakovich E, Curpen B

Abstract
Comparison of methods for the detection of outliers and associated biomarkers in mislabeled omics data.

Related Articles

Comparison of methods for the detection of outliers and associated biomarkers in mislabeled omics data.

BMC Bioinformatics. 2020 Aug 14;21(1):357


Abstract

BACKGROUND: Previous studies have reported that labeling errors are not uncommon in omics data. Potential outliers may severely undermine the correct classification of patients and the identification of reliable biomarkers for a particular disease. Three methods have been proposed to address the problem: sparse label-noise-robust logistic regression (Rlogreg), robust elastic net based on the least trimmed square (enetLTS), and Ensemble. Ensemble is an ensembled classification based on distinct feature selection and modeling strategies. The accuracy of biomarker selection and outlier detection of these methods needs to be evaluated and compared so that the appropriate method can be chosen.

RESULTS: The accuracy of variable selection, outlier identification, and prediction of three methods (Ensemble, enetLTS, Rlogreg) were compared for simulated and an RNA-seq dataset. On simulated datasets, Ensemble had the highest variable selection accuracy, as measured by a comprehensive index, and lowest false discovery rate among the three methods. When the sample size was large and the proportion of outliers was ≤5%, the positive selection rate of Ensemble was similar to that of enetLTS. However, when the proportion of outliers was 10% or 15%, Ensemble missed some variables that affected the response variables. Overall, enetLTS had the best outlier detection accuracy with false positive rates CONCLUSIONS: When the proportion of outliers is ≤5%, Ensemble can be used for variable selection. When the proportion of outliers is > 5%, Ensemble can be used for variable selection on a subset after removing outliers identified by enetLTS. For outlier identification, enetLTS is the recommended method. In practice, the proportion of outliers can be estimated according to the inaccuracy of the diagnostic methods used.

PMID: 32865001 [PubMed — as supplied by publisher]

Scoulerine promotes cell viability reduction and apoptosis by activating ROS-dependent endoplasmic reticulum stress in colorectal cancer cells.

Related Articles

Scoulerine promotes cell viability reduction and apoptosis by activating ROS-dependent endoplasmic reticulum stress in colorectal cancer cells.


Abstract

Scoulerine, an isoquinoline alkaloid isolated from Corydalis plants, has been reported to possess potent anti-proliferative and pro-apoptotic function in cancer cells. However, the effects and underlying mechanisms of scoulerine on colorectal cancer (CRC) progression remain elusive. CCK-8 and LDH assays were used to evaluate cell viability. Apoptosis was assessed by flow cytometry analysis, caspase-3/7 activity assay, and Western blot analysis of Bax, Bcl-2 and cytochrome c (Cyt C) expression. Oxidative stress level was examined by measuring reactive oxygen species (ROS) and glutathione (GSH) contents and superoxide dismutase (SOD) activity. Endoplasmic reticulum (ER) stress activation was detected by Western blot analysis of glucose-regulated protein 78 (GRP78) and C/EBP homologous protein (CHOP) expression. Results showed that scoulerine dose-dependently suppressed CRC cell viability. Scoulerine induced apoptosis and increased caspase-3/7 activity in CRC cells. Bax and cytosolic Cyt C expression was enhanced while Bcl-2 and mitochondrial Cyt C expression was reduced in scoulerine-treated CRC cells. Additionally, scoulerine induced oxidative damage in CRC cells by increasing ROS generation and reducing GSH content and SOD activity. Scoulerine activated ER stress, as evidenced by the increased GRP78 and CHOP expression in CRC cells. Interestingly, blocking ROS production by ROS scavenger N-acetyl-cysteine (NAC) attenuated scoulerine-induced ER stress. Inhibition of ER stress by 4-phenyl butyric acid (4-PBA) abolished scoulerine-induced ROS generation in CRC cells. Blockage of ROS and ER stress attenuated scoulerine-induced cell viability reduction and apoptosis in CRC cells. In conclusion, scoulerine
promoted cell viability reduction and apoptosis by activating ROS-dependent ER stress in CRC cells.

PMID: 32590070 [PubMed — indexed for MEDLINE]

Magnoflorine inhibits the malignant phenotypes and increases cisplatin sensitivity of osteosarcoma cells via regulating miR-410-3p/HMGB1/NF-κB pathway.

Related Articles

Magnoflorine inhibits the malignant phenotypes and increases cisplatin sensitivity of osteosarcoma cells via regulating miR-410-3p/HMGB1/NF-κB pathway.

Life Sci. 2020 Sep 01;256:117967


Abstract
AIMS: Magnoflorine is an essential type of alkaloid and possesses anti-tumor activity in multiple cancers. Recent studies have demonstrated that magnoflorine plays tumor-suppressive roles in gastric and breast cancers. However, its role in osteosarcoma (OS) tumorigenesis is enigmatic. This study aimed to investigate the role and mechanism of magnoflorine in OS.

MATERIALS AND METHODS: Two human OS cells (MG-63 and U-2 OS) were treated with different concentrations of magnoflorine. Cell viability and invasion were then detected by Cell Counting Kit-8 and Transwell assay, respectively. And the effects of magnoflorine on the epithelial-mesenchymal transition (EMT) and cisplatin sensitivity were also measured. To explore the potential mechanism, we assayed the influence of magnoflorine on the miR-410-3p/HMGB1/NF-κB signaling pathway. Additionally, rescue experiments were performed to further confirm the regulation mechanism of magnoflorine.

KEY FINDINGS: Magnoflorine inhibited the viability, invasion, and EMT of OS cells in a dose-dependent manner. And it increased the sensitivity of OS cells to cisplatin. Magnoflorine significantly suppressed HMGB1 expression and NF-κB activation, but upregulated miR-410-3p level. Overexpression of HMGB1 promoted NF-κB activation and reversed the effects of magnoflorine on the viability, invasion, EMT and cisplatin sensitivity of OS cells. miR-410-3p mimic inhibited the EMT of OS cells, which was restored by HMGB1 upregulation. And miR-410-3p inhibitor abrogated the influence of magnoflorine on HMGB1 expression in OS cells.

SIGNIFICANCE: Magnoflorine inhibited the malignant phenotypes and increased cisplatin sensitivity of OS cells via modulating miR-410-3p/HMGB1/NF-κB pathway. These results indicated that magnoflorine might be a novel drug for the treatment of OS.

PMID: 32553931 [PubMed — indexed for MEDLINE]


Related Articles


World Neurosurg. 2020 06;138:672–679

Authors: Mu L, Zhou Q, Sun D, Wang M, Chai X, Wang M

Abstract
OBJECTIVE: In this study, we considered the treatment of cognitive characteristics of Parkinson’s subtypes under resting magnetic resonance imaging scans, and used magnetic resonance imaging to analyze brain activity characteristics of patients with Parkinson’s subtypes at rest.

METHODS: In this study, patients with neurological Parkinson’s disease subtypes were selected: 27 patients in the tremor group, 33 patients in the orthostatic gastric instability group, and 3 patients with mild cognitive impairment and neuropathic Parkinson’s disease. Scientific treatment was adopted.

RESULTS: Nineteen patients had mild cognitive dysfunction tremor and unstable posture, and 23 of them had mild cognitive dysfunction. Fifteen healthy controls were subjected to resting state functional magnetic resonance imaging by plane echo imaging sequence scanning. Neurological diseases-Regional consistency analysis of brain regions in patients with Parkinson’s disease increased, including the right lower lobe, while regional consistency analysis of brain regions decreased, including the right frontal gyrus, right middle anterior gyrus, and lateral cerebellum.

CONCLUSIONS: The experimental results show that the local consistency analysis method based on resting magnetic resonance imaging scan can effectively detect the differences in early neural activity in patients with Parkinson’s disease subtype cognitive impairment, and can effectively reflect the brain characteristics of Parkinson’s disease.

PMID: 32545020 [PubMed — indexed for MEDLINE]

Henoch-schönlein Purpura (HSP) in a patient on Abemaciclib.

Related Articles

Henoch-schönlein Purpura (HSP) in a patient on Abemaciclib.

Breast. 2020 08;52:132–133

Authors: Omarini C, Molinaro E, Barbolini M, Dominici M, Piacentini F

PMID: 32512359 [PubMed — indexed for MEDLINE]
Surgeon’s preference of subcutaneous tissue resection: most important factor for short-term complications in subcutaneous implant placement after mastectomy-results of a cohort study.

Related Articles

Surgeon’s preference of subcutaneous tissue resection: most important factor for short-term complications in subcutaneous implant placement after mastectomy-results of a cohort study.

Arch Gynecol Obstet. 2020 04;301(4):1037-1045


Abstract

PURPOSE: Little is known about the reason of high short-term complication rates after the subcutaneous placement of breast implants or expanders after mastectomy without biological matrices or synthetic meshes. This study aims to evaluate complications and their risk factors to develop guidelines for decreasing complication rates.

METHODS: We included all cases of mastectomy followed by subcutaneous implant or expander placement between 06/2017 and 05/2018 (n = 92). Mean follow-up time was 12 months.

RESULTS: Explantation occurred in 15 cases (16.3%). The surgeon’s preference for moderate vs. radical subcutaneous tissue resection had a significant influence on explantation rates (p = 0.026), impaired wound healing or infection (requiring surgery) (p = 0.029, p = 0.003 respectively) and major complications (p = 0.018). Multivariate analysis revealed significant influence on complication rates for radical subcutaneous tissue resection (p up to 0.003), higher implant volume (p up to 0.023), higher drain volume during the last 24 h (p = 0.049), higher resection weight (p = 0.035) and incision type (p = 0.011).

CONCLUSION: Based on the significant risk factors we suggest the following guidelines to decrease complication rates: favoring thicker skin envelopes after surgical preparation, using smaller implants, removing drains based on a low output volume during the last 24 h and no use of periareolar incision with extension medial or lateral. We should consider ADMs for subcutaneous one-stage reconstructions. The individual surgeon’s preference of subcutaneous tissue resection is of highest relevance for short-term complications-this has to be part of internal team discussions and should be considered in future trials for comparable results.

PMID: 32157414

Pulmonary tumour thrombotic microangiopathy.

Related Articles

Pulmonary tumour thrombotic microangiopathy.

CMAJ. 2020 03 09;192(10):E256

Authors: Fujikawa H, Wakabayashi T

PMID: 32152054

Sentinel lymph node mapping with fluorescent and radioactive tracers in vulvar cancer patients.

Related Articles

Sentinel lymph node mapping with fluorescent and radioactive tracers in vulvar cancer patients.

Arch Gynecol Obstet. 2020 03;301(3):729-736


Abstract

PURPOSE: Application of radioactive tracers for sentinel lymph node biopsy (SLNB) in vulvar cancer has been established, however, the use of radioisotopes is expensive and requires complex logistics. This exploratory study evaluated the feasibility of near-infrared fluorescence-based SLNB in comparison to the gold standard using radioactive guidance.

METHODS: At Evangelische Kliniken Essen-Mitte (Essen, Germany) between 02/2015 and 04/2019, 33 patients with squamous cell vulvar cancer and unifocal tumors (32 midline, 1 lateral) smaller than 4 cm underwent SLNB as part of their routine primary surgical therapy. Radiolabeled nanocolloid technetium 99 (99mTc) was injected preoperatively and indocyanine green (ICG) intraoperatively. Demographic and clinical data were retrieved from patients’ records, and descriptive statistics were applied. The detection rate of the ICG fluorescence technique was compared with the standard radioactive approach.

RESULTS: In patients with midline tumors, bilateral SLNB was attempted. SLNB was feasible in 61/64 (95.3%) groins with 99mTc and in 56/64 (87.5%) with ICG. In total, 125 SLNs were excised; all SLNs were radioactive and 117 (93.6%) also fluorescent. In 8 patients with BMI > 30 kg/m2, SLNB was successful in 14/15 groins (93.3%) with 99mTc and in 13/15 groins (86.7%) with ICG. Upon final histology, infiltrated nodes were present in 9/64 (14.1%) groins and 10/125 SLNs; one positive SLN was not detected with ICG.

CONCLUSIONS: SLNB using ICG is a promising technique, however, the detection rate obtained was slightly lower than with 99mTc. The detection rate increased over time indicating that experience and training may play an important role besides further methodological refinements.

PMID: 32157414
Differentiating benign and malignant mass and non-mass lesions in breast DCE-MRI using normalized frequency-based features.

Abstract
PURPOSE: In this study, we propose a new computer-aided diagnosis (CADx) to distinguish between malign and benign mass and non-mass lesions in breast DCE-MRI. For this purpose, we introduce new frequency textural features.

METHODS: In this paper, we propose novel normalized frequency-based features. These are obtained by applying the dual-tree complex wavelet transform to MRI slices containing a lesion for specific decomposition levels. The low-pass and band-pass frequency coefficients of the dual-tree complex wavelet transform represent the general shape and texture features, respectively, of the lesion. The extraction of these features is computationally efficient. We employ a support vector machine to classify the lesions, and investigate modified cost functions and under- and oversampling strategies to handle the class imbalance.

RESULTS: The proposed method has been tested on a dataset of 80 patients containing 103 lesions. An area under the curve of 0.98 for the mass and 0.94 for the non-mass lesions is obtained. Similarly, accuracies of 96.9% and 89.8%, sensitivities of 93.8% and 92.3% are obtained for the mass and non-mass lesions, respectively.

CONCLUSION: Normalized frequency-based features can characterize benign and malignant lesions efficiently in both mass- and non-mass-like lesions. Additionally, the combination of normalized frequency-based features and three-dimensional shape descriptors improves the CADx performance.

Preoperative planning of lymphaticovenular anastomosis in patients with iodine allergy: A multicentric experience.

Abstract
The mechanism of papillary thyroid cancer (PTC) has shown numerous recurrently mutated genes, but the discovery of abnormal expression of novel tumor suppressor genes has been slow. The aim of our study is to explore the biological functions of SDPR in thyroid cancer. We reanalyzed the RNA-Seq data of PTC from The Cancer Genome Atlas (TCGA) database and found that serum deprivation response (SDPR) was significantly downregulated in PTC. Quantitative reverse transcription-polymerase chain reaction (RT-qPCR) was performed to assess the expression of SDPR. Both loss- and gain-of-function experiments, and flow cytometry were performed to investigate the functions. SDPR was significantly downregulated in PTC. Reduced expression of SDPR was associated with larger tumor size, more serious lymph node metastasis, and advanced American Joint Committee on Cancer (AJCC) stage. Patients with lower SDPR expression had a shorter recurrence-free survival. SDPR expression and AJCC stage were independent predictors of poor recurrence-free survival (RFS). Moreover, cell proliferation, colony formation, and migration were inhibited after SDPR expression.
overexpression, whereas knockdown of SDPR exerted an oncogenic effect. SDPR induction also initiated the mesenchymal-epithelial transition, alongside suppressing AKT signaling and cyclin family expression. Apart from DNA methylation, LOC105373813, may also co-regulate SDPR expression by forming a stable hybrid with SDPR messenger RNA. Our study indicated that SDPR may function as a potential prognostic marker in PTC.

PMID: 31334828 [PubMed — indexed for MEDLINE]

[A woman with a painful swelling in the breast].

Related Articles

[A woman with a painful swelling in the breast].

Ned Tijdschr Geneeskd. 2019 05 03;163:

Authors: Olthof DC, van Urk JJ, Groen EJ, Rutgers EJT, Skinner VP, Winter-Warnars HAO

Abstract

BACKGROUND: A hibernoma is a rare benign lipomatous tumour, consisting of brown and white fat cells. In general, a hibernoma is an asymptomatic swelling that increases slowly in size, but it can sometimes cause pain.

CASE DESRIPTION: A 62-year-old woman presented at the breast clinic with a painful swelling in the right breast that was increasing in size. Radiological examination initially suggested a hamartoma. However, on the basis of histological examination of a biopsy, the diagnosis of hibernoma was made. The hibernoma was removed surgically.

CONCLUSION: A hibernoma of the breast can grow to such a size that pain can arise due to compression of the mammary parenchyma. Surgical resection is only indicated if the hibernoma causes symptoms or for cosmetic reasons.

PMID: 31120222 [PubMed — indexed for MEDLINE]

Breast Arterial Calcium: A Game Changer in Women’s Cardiovascular Health?

Related Articles

Breast Arterial Calcium: A Game Changer in Women’s Cardiovascular Health?

JACC Cardiovasc Imaging. 2019 12;12(12):2538-2548


Abstract

In 2018, cardiovascular disease (CVD) was the leading cause of death among women, and current CVD prevention paradigms may not be sufficient in this group. In that context, it has recently been proposed that detection of calcification in breast arteries may help improve CVD risk screening and assessment in apparently healthy women. This review provides an overview of breast arterial anatomy, and the epidemiology, pathophysiology, and measurement of breast artery calcium (BAC); and discusses the features of the BAC-CVD link. The potential clinical applications that BAC may offer for CVD prevention in the context of current clinical practice guidelines and recommendations are also discussed. Finally, current gaps in evidence gaps are outlined, and future directions in the field are explored with a focus on the implementation of BAC mammography as a CVD risk-screening tool in routine clinical practice.

PMID: 30753056 [PubMed — indexed for MEDLINE]

Nanocatalytic Tumor Therapy by Single-Atom Catalysts.

Related Articles

Nanocatalytic Tumor Therapy by Single-Atom Catalysts.

ACS Nano. 2019 02 26;13(2):2643-2653

Authors: Huo M, Wang L, Wang Y, Chen Y, Shi J

Abstract

Initiating localized catalytic chemical reactions in tumor microenvironment (TME) can achieve appealing tumor-therapeutic efficacy concurrently with high specificity and desirable biosafety, which is mainly dependent on the high performance of biomedical nanocatalysts. This report demonstrates that PEGylated single-atom Fe-containing nanocatalysts (PSAF NCs) could effectively trigger the in situ tumor-specific Fenton reaction to generate abundant toxic hydroxyl radicals (•OH) selectively under the acidic TME. Based on density functional theory, it has been theoretically uncovered that the nanocatalysts could specifically catalyze the heterogeneous Fenton reaction via a proton-mediated H2O2-homolytic pathway. These generated radicals could not only lead to the apoptotic cell death of malignant tumors, but also induce the accumulation of lipid peroxides, causing tumor cell ferroptosis, which synergistically lead to an impressive tumor suppression outcome. In the meantime, the favorable biodegradability and biocompatibility of PSAF NCs also guarantee their desirable biosafety both in vivo and in vitro.

PMID: 30753056 [PubMed — indexed for MEDLINE]

The siRNAsome: A Cation-Free and Versatile Nanostructure for siRNA and Drug Co-delivery.

Related Articles

The siRNAsome: A Cation-Free and Versatile Nanostructure for siRNA and Drug Co-delivery.

Angew Chem Int Ed Engl. 2019 04 01;58(15):4938-4942


Abstract
Nanoparticles show great potential for drug delivery. However, suitable nanostructures capable of loading a range of drugs together with the co-delivery of siRNAs, which avoid the problem of cation-associated cytotoxicity, are lacking. Herein, we report an small interfering RNA (siRNA)-based vesicle (siRNAsome), which consists of a hydrophilic siRNA shell, a thermal- and intracellular-reduction-sensitive hydrophobic median layer, and an empty aqueous interior that meets this need. The siRNAsome can serve as a versatile nanostructure to load drug agents with divergent chemical properties, therapeutic proteins as well as co-delivering immobilized siRNAs without transfection agents. Importantly, the inherent thermal/reduction-responsiveness enables controlled drug loading and release. When siRNAsomes are loaded with the hydrophilic drug doxorubicin hydrochloride and anti-P-glycoprotein siRNA, synergistic therapeutic activity is achieved in multidrug resistant cancer cells and a tumor model.

PMID: 30737876 [PubMed — indexed for MEDLINE]

The Public’s Perception on Breast and Nipple Reconstruction: A Crowdsourcing-Based Assessment.

Related Articles

The Public’s Perception on Breast and Nipple Reconstruction: A Crowdsourcing-Based Assessment.

Aesthet Surg J. 2019 08 22;39(9):NP370-NP376
Authors: Azadgoli B, Gould DJ, Vartanian E, Patel KM
Abstract
BACKGROUND: Breast reconstruction outcomes have traditionally been measured by evaluating the opinions of patients and surgeons.
OBJECTIVES: Our goal was to assess the views of the general public.
METHODS: A survey was designed and distributed through a crowdsourcing website called Amazon Mechanical Turk. Questions assessed participant demographics, personal experience with breast reconstruction, perceptions on breast reconstruction, and opinions regarding aesthetics results. Responses were analyzed using chi-square test.
RESULTS: A total of 992 responses were collected. Most participants were female (56.1%), white (32.1%), aged 30 to 39 years (40.4%), and had a bachelor’s degree (42.0%). A total of 44.2% had personal experience with breast reconstruction and 25.8% with nipple reconstruction. Several aesthetic and reconstructive factors were significantly favored over others across sex, ethnicity, age group, education level, and personal experience with breast reconstruction. For instance, women were more likely to prefer reconstructed nipples (P < 0.0001), and aged 30 to 39 years were more likely to prefer non-reconstructed breasts (P < 0.0001). Conclusion: Crowdsourcing can be useful in plastic surgery and has helped identify several key findings. The importance of the nipple in reconstruction has been validated; almost three-quarters of respondents did not view a breast without a nipple as complete. The aesthetic preferences seem to support bilateral nipple-sparing reconstruction when possible. Most importantly, the respondents helped elucidate key differences in perception of aesthetic outcomes.

PMID: 30329011 [PubMed — indexed for MEDLINE]

Differences in Human Leukocyte Antigen Expression Between Breast Implant-Associated Anaplastic Large Cell Lymphoma Patients and the General Population.

Related Articles

Differences in Human Leukocyte Antigen Expression Between Breast Implant-Associated Anaplastic Large Cell Lymphoma Patients and the General Population.

Authors: Tevis SE, Hunt KK, Miranda RN, Lange C, Butler CE, Clemens MW
Abstract
BACKGROUND: Breast implant-associated anaplastic large cell lymphoma (BIA-ALCL) is an uncommon T-cell lymphoma associated with textured-surface breast implants. Human leukocyte antigen (HLA) polymorphisms have been described with other forms of lymphoma, but have not been described for BIA-ALCL. The objectives of this study were to analyze HLA alleles in patients with BIA-ALCL.
METHODS: We prospectively evaluated HLA alleles in patients with BIA-ALCL. HLA was analyzed by probe-based sequence-specific testing and sequence-based typing. The frequencies of HLA-A, HLA-B, HLA-C, HLA-DRB1, and HLA-DQB1 alleles were evaluated. Allele frequencies in the Caucasian European general population were obtained from the National Marrow Donor Program to serve as normative controls. We estimated the relative risk of BIA-ALCL with 95% confidence intervals from a t test.
RESULTS: Thirteen patients who had undergone BIA-ALCL and HLA testing were identified from 2017 to 2018. Patients carried 10, 11, and 9 HLA-A, HLA-B, and HLA-C alleles, respectively. There were 8 DRB1 alleles and 5 DQB1 alleles in the BIA-ALCL patients. The A*26 allele occurred significantly more frequently in the general population compared with BIA-ALCL patients (0.2992 vs 0.07692, P < 0.0001). Conclusions: Our results identify a difference between HLA A*26 in patients who develop BIA-ALCL and the general population, and may signify genetic susceptibility factors responsible for germline genetic variation in HLA in patients with BIA-ALCL. Further work is needed to elucidate if these alleles are predictive for BIA-ALCL in women with textured-surface breast implants.

Level of Evidence: 4.

PMID: 30715139 [PubMed — indexed for MEDLINE]

Related Articles


Aesthet Surg J. 2019 08 22;39(9):1019–1032

Authors: Nayyar A, Jadi J, Garimella R, Elkins-Williams ST, Gallagher KK, Kalliainen LK, Hultman CS, Wu C

Abstract

BACKGROUND: Social media has become an indispensable tool for patients to learn about aesthetic surgery. Currently, procedure-specific patient preferences for social media platforms and content are unknown.

OBJECTIVES: The authors sought to evaluate social media preferences of patients seeking aesthetic surgery.

METHODS: We utilized a choice-based conjoint analysis survey to analyze the preferences of patients seeking 3 common aesthetic procedures: breast augmentation (BA), facial rejuvenation (FR), and combined breast/abdominal surgery (BAB). Participants were asked to choose among social media platforms (Facebook, Twitter, Instagram, Snapchat, Pinterest, Tumblr, YouTube), information extent (basic, moderate, comprehensive), delivery mechanism (prerecorded video, live video, photographs, text description), messenger (surgeon, nurse/clinic staff, patient), and option for interactivity (yes/no). The survey was administered using an Internet crowdsourcing service (Amazon Mechanical Turk).

RESULTS: A total of 647 participants were recruited: 201 in BA, 255 in FR, and 191 in BAB. Among attributes surveyed, participants in all 3 groups (BA, FR, BAB) valued social media platform as the most important (30.9%, 33.1%, 31.4%), followed by information extent (23.1%, 22.9%, 21.6%), delivery mechanism (18.9%, 17.4%, 18%), messenger (16%, 17%, 17.2%), and interactivity (11.1%, 9.8%, 11.8%). Within these attributes, Facebook ranked as the preferred platform, with comprehensive information extent, live video as the delivery mechanism, and surgeon as the messenger as most preferred.

CONCLUSIONS: The choice of social media platform is the most important factor for patients, and they indicated a preference for comprehensive information delivered by the surgeon via live video on Facebook. Our study elucidates social media usage in common aesthetic populations, which can help improve aesthetic patient outreach.

PMID: 30239573 [PubMed — indexed for MEDLINE]