Short Communication   **Published Date:-2023-05-10 17:51:56**

Nanometer-scale distribution of PD-1 in the melanoma tumor microenvironment

The nanometer-scale spatial organization of immune receptors plays a role in cell activation and suppression. While the connection between this spatial organization and cell signaling events is emerging from cell culture experiments, how these results translate to more physiologically relevant settings like the tumor microenvironment remains poorly understood due to the challenges of high-resolution imaging in vivo. Here we perform super-resolution immunofluorescence microscopy of human melanoma tissue sections to examine the spatial organization of the immune checkpoint inhibitor programmed cell death 1 (PD-1). We show that PD-1 exhibits a variety of organizations ranging from nanometer-scale clusters to more uniform membrane labeling. Our results demonstrate the capability of super-resolution imaging to examine the spatial organization of immune checkpoint markers in the tumor microenvironment, suggesting a future direction for both clinical and immunology research.

Research Article   **Published Date:-2023-04-10 16:56:00**

Diagnostic accuracy of apparent diffusion coefficient (ADC) in differentiating low- and high-grade gliomas, taking histopathology as the gold standard

Gliomas are known to be one of the most grievous malignant central nervous system (CNS) tumors and have a high mortality rate with a low survival rate severe disability and increase risk of recurrence. Aim of his study is to determine the diagnostic accuracy of apparent diffusion coefficient (ADC) in differentiating low-grade and high-grade gliomas, taking histopathology as the gold standard. It is a Cross-sectional validation study conducted at the Armed Forces Institute of Radiology and Imaging, (AFIRI) Rawalpindi, Pakistan from 28th February 2022 to 27th August 2022.
Materials and methods: A total of 215 patients with focal brain lesions of age 25-65 years of either gender were included. Patients with a cardiac pacemaker, breastfeeding females, de-myelinating lesions and malignant infiltrates, and renal failure were excluded. Then diffusion-weighted magnetic resonance imaging was performed on each patient by using a 1.5 Tesla MR system. The area of greatest diffusion restriction (lowest ADC) within the solid tumor component was identified while avoiding areas of peritumoral edema. Results of ADC were interpreted by a consultant radiologist (at least 5 years of post-fellowship experience) for high or low-grade glioma. After this, each patient has undergone a biopsy in the concerned ward, and histopathology results were compared with ADC findings.
Results: Overall sensitivity, specificity, positive predictive value, negative predictive value, and diagnostic accuracy of apparent diffusion coefficient (ADC) in differentiating low- and high-grade gliomas, taking histopathology as the gold standard was 93.65%, 87.64%, 91.47%, 90.70% and 91.16% respectively.
Conclusion: This study concluded that apparent diffusion coefficient (ADC) is the non-invasive modality of choice with high diagnostic accuracy in differentiating low- and high-grade gliomas.

Research Article   **Published Date:-2023-02-23 16:02:58**

Effects of Pleiotrophin (PTN) on the resistance to paclitaxel in ovarian cancer cells

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The pathogenesis of an ovarian disease is connected with PTN and its receptor protein tyrosine phosphatase receptor Z1 (PTPRZ1). Paclitaxel is the first-line drug for the therapy of ovarian cancer. With the increment of paclitaxel chemotherapy, paclitaxel obstruction happens in the late phase of therapy frequently. By treating A2780 and SKOV-3 cells with PTN, we found the development of the two cell lines was enhanced. Different concentrations of PTN were added to A2780 and SKOV-3 cells treated with paclitaxel and the results of MTT showed that the inhibitory effect of paclitaxel on these two cell lines was weakened. The results of apoptosis assays showed that PTN could slow down the rate of apoptosis and its concentration dependence in both cell lines. To further investigate the impact of PTN on the paclitaxel responsiveness of ovarian malignant growth cells, A2780 and SKOV-3 cells were transfected with sh-PTN-1, sh-PTN-2 and sh-NC plasmids. The results of PCR and Western Blot showed that both RNA-interfering plasmids could inhibit PTN in A2780 and SKOV-3 cells. The results of MTT showed that the inhibitory effect of paclitaxel on cells transfected with sh-PTN-1 expanded compared with the benchmark group. Apoptosis assays showed that the complete apoptosis pace of A2780 and SKOV-3 cells with sh-PTN-1 plasmid induced by paclitaxel was accelerated obviously compared with the benchmark group. To summarize, the results suggested that PTN could enhance the resistance to paclitaxel in ovarian cancer cells, which provides a groundwork for studying on drug resistance of cancer cells to paclitaxel and a new perspective for ovarian cancer therapy.

Retrospective Study **Published Date:-2023-02-14 15:52:40**

Mammographic correlation with molecular subtypes of breast carcinoma

Aim: To determine the correlation between mammographic features of breast cancer with molecular subtypes and to calculate the predictive value of these features.
Materials and method: This is a retrospective study of breast cancer patients presenting between January 2017 and December 2021, who underwent mammography of the breast followed by true cut biopsy and immunohistochemical staining of the tissue sample. Breast carcinoma patients without preoperative mammograms, those unable to undergo histopathological and IHC examinations and h/o prior cancer treatment were excluded. On mammography, size, shape, margins, density, the presence or absence of suspicious calcifications and associated features were noted.
Results: Irregular-shaped tumors with spiculated margins were likely to be luminal A/B subtypes of breast cancer. Tumors with a round or oval shape with circumscribed margins were highly suggestive of Triple negative breast cancer. Tumors with suspicious calcifications were likely to be HER2 enriched.
Conclusion: Mammographic features such as irregular or round shape, circumscribed or noncircumscribed margins and suspicious calcifications are strongly correlated in predicting the molecular subtypes of breast cancer and thus may further expand the role of conventional breast imaging.