J Mol Biomark Diagn 2016, 7:5(Suppl)
http://dx.doi.org/10.4172/2155-9929.C1.029

IHC4 score predicts pathological complete response of neoadjuvant chemotherapy in breast cancer

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The predictive value of a combined four immunohistochemical marker score (IHC4 score) for neoadjuvant chemotherapy (NAC) remains unclear. This study aimed to investigate the predictive value of IHC4 score in predicting pathological complete response (pCR) after NAC in patients with breast cancer (BC). In the present study, we retrospectively reviewed 443 BC patients with NAC and identified a significant association between the IHC4 score prior to NAC and a pCR in the entire cohort. A stratified analysis demonstrated that a high IHC4 score was correlated with a high pCR rate in the patients with ER-positive, small tumor size and anthracycline and taxanes-based regiment (ET) administration. Multivariate analysis showed the IHC4 score was an independent predictive factor for a pCR. ROC analysis demonstrated that IHC4 score exhibited an increased predictive accuracy for a pCR compared with other clinicopathological factors. This study provides a strong rationale for further prospective clinical trials to validate the IHC4 score as a biomarker to predict the clinical response of NAC, which will facilitate the identification of individuals who may receive the most benefit from NAC.

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P21-activated kinase 1 is a potential biomarker of human prostate cancer

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Prostate cancer (PCa) is the most common malignant tumor without clinical symptoms at an early stage in men. However, its etiology and pathogenesis remain unclear. P21-activated kinase 1 (PAK1) is a member of a family of serine/threonine kinases highly conserved throughout evolution. It has been shown that PAK1 is involved in cancer cell growth, invasion and metastasis, but little is known about PAK1 expression in patients with PCa. In this study, a total of 113 patients with PCa and benign prostate hyperplasia (BPH) who were treated in our hospital were analyzed retrospectively. The expression of PAK1 in prostate cancer and benign prostate hyperplasia tissues was determined by immunohistochemistry and Western blot. PAK1 protein expression was significantly increased in patients with PCa compared to patients with BPH (PCa vs. BPH, $P<0.05$). PAK1 expression was associated with PSA, AKP and BIM. The expression of PAK1 at the mRNA and protein levels in PCa cell lines, such as DU145, PC-3, LNCaP and RWPE-1, was determined by quantitative real-time PCR and Western blot, respectively. The level of PAK1 expression was higher in DU145 cells than those in PC-3, LNCaP and RWPE-1 cells. Furthermore, PAK1 expression was regulated by mTOR inhibitor Rapamycin and mTOR activator MHY1485 in DU145, LNCaP and RWPE-1 cells. These data indicate the involvement of the mTOR-mediated pathway in the regulation of PAK1. In conclusion, this study demonstrated that PAK1 is upregulated in human PCa and mediated by the mTOR signaling pathway. PAK1 may be a PCa marker and therapeutic target.

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