CXCL10 clinical significance

Baseline pre-treatment plasma levels of CXCL10 are elevated in patients chronically infected with hepatitis C virus (HCV) of genotypes 1 or 4 who do not achieve a sustained viral response (SVR) after completion of antiviral therapy.

CXCL10 in plasma is mirrored by intrahepatic CXCL10 mRNA, and both strikingly predict the first days of elimination of HCV RNA ("first phase decline") during interferon/ribavirin therapy for all HCV genotypes.

This also applies for patients co-infected with HIV, where pre-treatment IP-10 levels below 150 pg/mL are predictive of a favorable response, and may thus be useful in encouraging these otherwise difficult-to-treat patients to initiate therapy. The pathogen Leishmania major utilizes a protease, GP63, that cleaves CXCL10, implicating CXCL10 in host defense mechanisms of certain intracellular pathogens like Leishmania.

CGGA and TCGA database analysis showed that with the increase of WHO grade, the expression of CXCL10 in gliomas increased (P<0.01). The overall survival rate of patients with high CXCL10 expression was significantly lower than that of patients with low expression ($\chi 2$ =148.1,P<0.05). Among patients with grade IV glioblastoma who received radiotherapy or chemotherapy, the patients with low CXCL10 expression were associated with good survival ($\chi 2$ =6.714,P<0.05;$\chi 2$ =5.618,P<0.05). Moreover, GO and KEGG analysis showed that genes co-expressed with CXCL10 were mainly enriched in the biological processes such as cytokine-mediated signaling pathways, regulating adaptive immune responses and inflammatory responses. Furthermore, TIMER database analysis showed that CXCL10 was negatively correlated with the purity of glioma cells (LGG: r=-0.129;Glioblastoma: r=-0.165;P<0.05). Similarly, clinical sample analysis also showed that the expression level of CXCL10 increased in glioma, and it increased with the grade of glioma (all P<0.05). Conclusion: The expression of CXCL10 is up-regulated in glioma as well as it increased with the malignant degree of glioma. At the same time, the high expression of CXCL10 in glioma is closely related to the poor prognosis of patients [1)].

Wienke et al., identified two proteins that highly correlate with juvenile dermatomyositis (JDM) disease activity: galectin-9 and CXCL10.

They validated galectin-9 and CXCL10 as biomarkers for disease activity, assess disease-specificity and investigate their potency to predict flares.

Galectin-9 and CXCL10 were measured in serum samples of 125 unique JDM patients in three international cross-sectional cohorts and a local longitudinal cohort, by multiplex immunoassay. Disease-specificity was examined in 50 adults with (dermato)myositis and 61 patients with other systemic autoimmune diseases.

Galectin-9 and CXCL10 outperformed the currently used marker creatine kinase (CK) to distinguish between JDM patients with active disease and remission, both cross-sectionally and longitudinally (area ROC curve: 0.86-0.90 for galectin-9 and CXCL10, 0.66-0.68 for CK). The sensitivity and specificity were 0.84 and 0.92 for galectin-9, and 0.87 and 1.00 for CXCL10. In 10 prospectively

followed patients with a flare, continuously elevated or rising biomarker levels suggested an imminent flare up to several months before symptoms, even in absence of elevated CK. Galectin-9 and CXCL10 distinguished between active disease and remission in adults with (dermato)myositis and were suited for measurement in minimally-invasive dried blood spots.

Galectin-9 and CXCL10 were validated as sensitive and reliable biomarkers for disease activity in (J)DM. Implementation of these biomarkers into clinical practice, as tools to monitor disease activity and guide treatment, might facilitate personalized treatment strategies [2].

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2)
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