The research progress and biomarker research of chronic prostatitis

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Chronic Prostatitis/Chronic Pelvic Pain Syndrome (CP/CPPS) is an important public health problem. CP/CPPS is a poorly understood entity characterized by pelvic or perineal pain, irritative voiding symptoms and sexual dysfunction, and from a clinical point of view, is truly lacking a cause that would allow a more rational-driven therapy. As a common genitourinary disease of adult males, diagnosis, treatments and prognostic monitoring of prostatitis have always been the focus of clinical attention, as a result of its setbacks, such as complex pathogenesis and clinical symptoms, lacking specificity in medication and its high rate of recurrence and so on. Currently, there isn’t a golden standard in diagnosis of prostatitis, while the detection of biomarkers can be helpful for the diagnosis, treatment and prognostic monitoring of prostatitis. Following significant improvements of the methods of detection in biological fluids, a number of prostate inflammation biomarkers were identified and quantified, in peripheral blood, urine and seminal plasma. In fact, White Blood Cells (WBC) count in Expressed Prostatic Secretions (EPS) has long been considered as the marker of prostatitis. However, it does not appear to be the optimal marker of inflammation and the current categorization of chronic prostatitis/chronic pelvic pain syndrome IIIIB and asymptomatic inflammatory prostatitis as inflammatory or non-inflammatory based on WBC count appears to offer little clinically useful information and whilst WBC can be found in the prostatic fluid or seminal plasma of asymptomatic men as well as in that of men with pelvic pain. Also, the measures of the NIH-CP Symptom Index in symptomatic men show no correlation with WBC in EPS or seminal plasma. As the prostatitis biomarkers, cytokines/chemokine may have high sensitivity and good specificity. Cytokines are regulatory proteins released by various cellular subtypes that promote intercellular communication and immune responses. Chemokines are a subset of cytokines that recruit and activate immune cells to sites of inflammation. Interleukin 8 (IL-8) is a pro-inflammatory cytokine and plays an important role in different inflammatory diseases. Significant correlations between IL-8 levels and symptom score results were found. IL-8 values strongly correlated with CP/CPPS. Moreover, the patients with higher levels of IL-8 reported the worst symptoms. The study has shown that IL-8 was significantly elevated compared to controls in patients with CP/CPPS IIIA, CP/CPPS IIIB and benign prostatic hyperplasia (BPH). IL-8 is a reliable biomarker in seminal plasma for chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS) and for BPH and also the IL-8 levels were correlated with symptom scores and serum PSA values, increasing its value as a biomarker for prostate inflammation. Monocyte Chemoattractant Protein-1 (MCP-1) and macrophage inflammatory protein-1α (MIP-1α) recruit monocytes and macrophages via their release from fibroblasts and macrophages in joints of patients with rheumatoid arthritis and perpetuate the inflammatory process. For MCP-1 and MIP-1α, chronic pelvic pain syndrome subtypes had statistically higher levels than the control group and patients with benign prostatic hyperplasia. MCP-1 and MIP-1α within the prostatic fluid in both chronic pelvic pain syndrome subtypes provide candidate future biomarkers for chronic pelvic pain syndrome. In addition, macrophage inflammatory protein-1α increase in expressed prostatic secretions provides a new marker for clinical pain in chronic pelvic pain syndrome patients. Given these findings prostatic dysfunction likely has a role in the pathophysiology of this syndrome.

Biography

Zu-Yue Sun is the Research Director of National Evaluation Centre for the Toxicology of Fertility Regulating Drug. He has published more than 312 theses in China and abroad reputed journals.

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