

Evaluation of Urinary Interleukin-8 Levels in Patients with Spinal Cord Injury

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Abstract:

Introduction: Interleukins are a group of cytokines responsible for regulating inflammatory and infectious responses. Interleukin-8 plays an important role in chemotaxis and functioning of leukocytes and is locally produced in infected tissues; it is seen in abundance in the urine of individuals with Urinary Tract Infection.

Aim of study: The goal of the current project was to evaluate the level of IL-8 in the urine of individuals with SCI and examine its association with the intensity of UTI and level of SCI.

Materials & Methods: A total of 97 patients with SCI took part in this study, 85 of which were male and 12 were female. The female patients' average age was 32.58 ± 7.4 years whereas the male patients' average age was 32.25 ± 10.9 . Midstream sterile urine sampling was performed in different patients admitted to the Spinal Cord Injury (SCI) research center. Samples from patients who could not willingly urinate were taken directly by a doctor via suprapubic aspiration- using a syringe. Samples from patients with urinary incontinence were taken using a catheter which had just been replaced. The samples were tested to determine the level of IL-8 through the ELISA method. The commercial kit used for this study was an R & D kit built in Germany. In this project, patients with SCI were categorized into three groups. Twenty four patients suffered from cervical injuries, 44 from thoracic and the remaining 29 patients suffered from lumbar injuries. The difference in the IL-8 levels between these three groups which was measured using the ANOVA test was not significant ($p=0.095$).

Results: According to leaflet of R & D ELISA kits for IL8 and the reference books and or previous investigations, in healthy people, the level of urinary IL-8 is less than 10 pg/ml. Higher values indicate an infection in the body. Based on the severity of the infection, the levels of IL-8 increase. The mean level of IL-8 was 369.59pg/ml and 75.42pg/ml in male and female patients respectively. Among the 97 patients under study, 87 (89.7%) were IL-8 positive (>10 pg/ml) and 10 patients were IL-8 negative (<10 pg/ml). Among the 87 IL-8 positive subjects, 64 patients had no UTI symptoms, while 23 did.

Conclusion: SCI patients should have their urinary IL-8 levels measured on a routine and periodic basis, irrespective of their SCI severity or the presence or absence of UTI symptoms. Microbiological assays for diagnosis of Urinary Tract Infection and antibiotic sensitivity tests take a long time at mean 72 hours and delay in antibiotic treatments but the measurement of IL-8 is a rapid test. The timely and effective diagnosis & treatment of UTI can prevent the irreversible complications caused by frequent UTI and resistance to treatment in this group of patients.

Key words: Interleukin 8 (IL-8), spinal cord injury (SCI), urinary tract infection (UTI).