

## **ABSTRACT**

### **THE ROLE OF THE INFLAMMATION IN THE PATHOGENESIS OF URINARY TRACT INFECTION IN CHILDREN**

Early diagnosis and treatment of urinary tract infections are important for preventing acute complications and chronic renal failure. Clinical signs and urine analyses are not always satisfactory for early and accurate diagnosis of urinary tract infection. The differentiation between acute pyelonephritis and cystitis may not also be possible in all cases.

The aim of this study was to investigate urine leukocyte distribution and interleukin-8 levels and to evaluate the effects of these tests on diagnosis and localization of urinary tract infection.

A total of 82 patients with suspected urinary tract infection and pyuria (mean age:  $6.52 \pm 3.65$  year, 68 girls) and 49 healthy children, which are similar in age and gender, were included to the study. Numbers and distribution of leukocytes in the urine were evaluated by counter and giemsa stain urinary sediment smear. Urine interleukin-8 levels were measured by ELISA method. The patients were divided into two groups as having positive ( $n=35$ ) and negative ( $n=41$ ) urine culture.

In the urine sediment smear, polymorphonuclear leukocytes were dominant in 64.6% patients, lymphocytes were dominant in 34.1% patients. No significant correlation was observed among leukocyte distributions and urine dipstick findings, inflammatory markers, urine culture and the localization of urinary tract infection.

Evaluation of leukocyte distribution by counter, polymorphonuclear leukocytes were dominant in 70.7% patients, lymphocytes were dominant in 8.5% patients and eosinophils were dominant in 13.4%. The counter was found to recognize polymorphonuclear leukocytes better than other cells.

The urine interleukin-8 levels were significantly higher in patients with pyuria ( $382.17 \pm 306.53$  pg/ml) than in control group ( $20.30 \pm 11.93$  pg/ml) ( $p < 0.005$ ). Good correlation between urine interleukin-8 levels and leukocyte numbers were observed ( $r=0.50$ ,  $p < 0.005$ ). Urine interleukin-8 levels were found significantly higher in patients with positive urine culture ( $537.45 \pm 327.42$  pg/ml) than patients with negative urine culture ( $286.27 \pm 246.32$  pg/ml). *Escherichia coli* growth also was found to cause significant higher

interleukin-8 levels. The urine interleukin-8 levels in pyelonephritis were higher than in cystitis, however, it was not significant.

In conclusion; in this study evaluation of urine sediment smear for leukocytes distribution was not found to have any role in diagnosis and localization of urinary tract infection. Investigation of urine interleukin-8 levels was found useful for early diagnosis of urinary tract infection. However, it was not found efficacious in determination of localization of urinary tract infection.

**Keywords:** Childhood, urine sediment smear, urinary tract infection, interleukin-8, pyuria