

Abstract

Determination the abnormalities of technetium Tc 99m dimercaptosuccinic acid renal scintigraphy in children aged 1 to 12 years with the first acute pyelonephritis infection and their association with vesicoureteral reflux

Background and objective: Acute pyelonephritis and vesicoureteral reflux are one of the main causes of renal scarring in children, which can lead to serious complications such as hypertension and chronic renal failure. The aim of this study was to evaluate the scan disorders in children aged 1-12 years with acute pyelonephritis and its relation with ureteral bladder reflux.

Methods: This retrospective descriptive study was conducted on the records of all children aged 1 to 12 who were admitted in the Ardebil Children's Hospital during the four years (1394-1391) with febrile urinary tract infection. 99mTc-DMSA scan and ultrasonography and cystoytrorography of patients were extracted from the files.

Results: Of the 845 studied cases examined, 148 cases for 9 boys and 139 cases for girls from the age range of 1 to 12 years old who were first admitted to the acute diagnosis of acute pyelonephritis. The mean age was $52/34 \pm 34/34$ months. Of these, 123 patients were subjected to cystoyurethrography after a negative urine culture. A 99mTc-DMSA scan report in the acute phase of the disease was abnormal in 80.4% of children. Cystoyurethrography was found in 123 patients, in 70 cases (57%), and in 53 (43%) cases of urinary tract reflux. Frequency of reflux with abnormal 99mTc-DMSA scan was 42%. There was no significant correlation between the frequency of reflux in patients with abnormal 99mTc-DMSA scan in two groups of 1-4 years and more than 4 years ($p = 0.1$). There was no statistically significant difference in the response of treatment and with comparison of discontinuation time after admission in patients who have normal 99mTc-DMSA with patients of abnormal scan ($p = 0.5$)

Conclusion: The results showed that high prevalence of reflux was in patients with acute pyelonephritis. Due to the high sensitivity of the scan to detect pyelonephritis and, on the other hand due to invasive and high levels of VCUG radiation that imposed to patient, we can minimize the number of VCUG performanc by 99mTc-DMSA scan which will avoid significant percentage of patients who use VCUG.

Key Words: 99mTc-DMSA scan, children, Vesico-ureteral reflux, Acute pyelonephritis, VCUG