ORIGINAL ARTICLE

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Evaluation of dilated upper renal tracts by technetium-99m ethylenedicysteine F+0 diuresis renography in infants and children

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Aim: To evaluate the feasibility of modifying diuresis renography by the simultaneous administration of Tc-99m ethylenedicysteine and furosemide in the investigation of hydronephrosis and hydroureteronephrosis in infants and children. Parameters assessed were the diuretic response in normal kidneys and the ability of the F+0 study to differentiate between renal obstruction and nonobstruction. ***Methods:*** One hundred and thirty-three children (93 males, 40 females; mean age 35.2 months) with sonographic diagnoses of hydronephrosis or hydroureteronephrosis underwent F+0 diuresis renography. Tc-99m ethylenedicysteine (3.7 MBq/kg body weight) and furosemide at an appropriate dose were administered intravenously at the start of the study. Posterior imaging of the kidneys and bladder was performed for 20 min followed by imaging after voiding. All patients were followed-up for 12 months, and the results of the initial F+0 diuresis renography were compared with the final diagnoses. Final diagnosis was based on the pediatric urologist's decision of either surgery or conservative management. ***Results:*** A renal unit was defined as a kidney and its ureter. There were 262 renal units with 4 patients having a solitary kidney. 90 normal and 172 abnormal renal units on sonography were assessed by F+0 diuresis renography. The furosemide clearance half time for the 90 normal renal units was 5.8 ± 1.4 min. Of the 172 abnormal renal units, 100 were classified as nonobstructed and 72 as obstructed on diuresis renography. All 100 nonobstructed renal units were correctly classified with no false-negative studies; of the 72 renal units classified as obstructed, there were 43 true-positive studies and 29 false-positive studies. The sensitivity was 100%, specificity was 78% and accuracy was 83%. ***Conclusion:*** Tc-99m ethylenedicysteine F+0 diuresis renography is a valid method for the investigation of hydronephrosis and hydroureteronephrosis in infants and children.

Key words: Tc-99m EC, F+0, diuresis renography, pelviureteric junction obstruction