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Diuretic ^{99m}Tc DTPA renography in assessment of renal function and drainage in infants with antenatally detected hydronephrosis

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Background: Controversy about the postnatal management of infants with antenatally detected hydronephrosis (ANH) still exists. We report the results of diuretic ^{99m}Tc DTPA renography on 30 infants presenting with an antenatal diagnosis of unilateral renal pelvic dilatation.

Aim: Aim of this study was to assess the renal function determined by the pattern of drainage and split renal function (SRF) on diuretic renography and to correlate these findings with antero-posterior pelvic diameter (APD) estimated by ultrasonography.

Methods: Thirty infants with 60 renal units (RU) (25 boys and 5 girls, median age 6.0 months, range 2–24) who presented with unilateral hydronephrosis on ultrasound in newborn period underwent DTPA diuretic renal scintigraphy (F+15 protocol). We classified hydronephrosis into 3 groups according to APD: Mild (APD 5–9.9 mm) in 5/60 RU, moderate (APD 10–14.9 mm) in 10/60 RU and severe (APD ≥15 mm) in 17/60 RU. The postnatal associated clinical diagnosis were pelviureteric junction obstruction (PUJ), simple hydronephrosis, megaureter, vesicoureteral reflux (VUR) and posterior urethra valves in 11, 10, 6, 2 and 1 infant respectively. Images and T_{max}/2 after diuretic stimulation on the background subtracted renographic curves were used as the criteria for classifying the drainage as 1) good 2) partial and 3) poor or no drainage. SRF was calculated with integral method.

Results: Good drainage was shown in 36/60, partial drainage in 13/60 and poor or no drainage in 11/60 RU. In infants with severe ANH (APD ≥15 mm), obstruction was not excluded in 1/17 RU (94.1%); and in infants with mild to moderate ANH, obstruction excluded in 13/15 RU (86.7%); p < 0.001. Split renal function (SRF) >40% was observed in 55/60 RU, with no RU showing SRF less than 23.5%.

Conclusion: Although ANH is mostly benign condition and has favorable outcome, it can also cause a significant morbidity. Diuretic renography in antenatally detected hydronephrosis should be a useful tool in postnatal follow up, especially in differentiating nonobstructive form hydronephrosis from obstructive. In the presence of partial or no drainage, the SRF may not be significantly impaired. Finding of poor renal emptying is significantly more common among children with increasing renal pelvis APD.

Biography

Boris Ajdinovic is the head of Institute for the Nuclear Medicine, Military Medical Academy, Belgrade. He is a graduate from the University of Belgrade in 1978 and The Reserve Officers School in Belgrade in 1979. He did his specialization in Nuclear Medicine in London. He defends his doctoral thesis in the field of nuclear medicine in 1996. He has over 250 specialized and scientific published articles, in domestic and foreign journals.

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