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Scintigraphy in children with urinary tract dilatation (Antenatally Detected Hydronephrosis)

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The causes of antenatal hydronephrosis/urinary tract dilatation (ANH/UTD) vary from transient benign conditions-transit hydronephrosis, (resolves by birth or during infancy) to conditions that can significantly affect renal function. The outcome of depends on the underlying etiology, so it is very important to determine these causes. The definition and grading of ANH is based on anteroposterior pelvic diameter (APD) of the fetal renal pelvis.

Antenatal management includes antenatal ultrasound monitoring, which is usually repeated every 4-6 weeks. It is recommended that the assessment of the severity of postnatal hydronephrosis is based on the APD of the renal pelvis. Extensive postnatal investigation was proposed to be limited to those with moderate or severe dilatation. Voiding cistouretrography and scintigraphy are usually preserved for children with postnatal APD <15 mm and/or abnormal kidney parenchyma, sever caliyx dilatation ureteral dilatation and blader patology.

diuretic renal scintigraphy is important in postnatal evaluation of infants with ANH, particularly in distinguishing kidney with the poor drainage from the nonobstructive hydronephrosis with the good drainage. Accordingly to our diuretic renography results we conclude that in the presence of partial or no drainage, the separate renal function may not be significantly impaired. Finding of poor renal emptying is significantly more common among children with increasing renal pelvis APD.

Technetium 99m-dimercaptosuccinic acid renal scintigraphy (99mTc-DMSA) has been used in renal imaging to estimate the functional renal mass (damage the kidney) and relative renal function, especially in pediatric patients. Statistically significant correlation between the degree of the hydronephrosis (APD) and DMSA scan finding and between the degree of the VUR and DMSA scan finding was established. Other than VUR, CAKUT (pelviureteric junction obstruction, pyelon et ureter duplex, megaureter, posterior urethra valves) were not statistically correlated with pathological findings on DMSA scan.

Conclusion

Contribution of nuclear medicine methods in investigating children with ANH/UTD is proved by our studies. Diuretic dinamyc scintigraphy and DMSA scintigraphy have important role for the evaluation and management of these children.

Biography

Boris Ajdinovic is the Head of Institute for the Nuclear Medicine, Military Medical Academy, Belgrade. He is a Professor and has obtained Doctor of Science degree in Nuclear Medicine. He has graduated from University of Belgrade in 1978 and has obtained Nuclear Medicine specialization. He is an Instructor of Nuclear Medicine for students specializing in internal medicine and surgery from 1985. He has over 250 specialized and scientific published articles and is the recipient of many awards and honors.