

15TH WORLD NEPHROLOGY CONFERENCE

May 20-21, 2019 Tokyo, Japan

Technetium 99M-dimercaptosuccinic acid renal scintigraphy in children with antenatal hydronephrosis

Boris Ajdinović^{1,2}, Biljana Bazić-Dorović¹, Marija Radulović¹, Marija Sisić¹, Ljiljana Jauković^{1,2}, Sanja Dugonjić³, Dragan Pucar^{1,2}, Zoran Janković^{1,2}, Slobodanka Beatović³, Milica Janković³ and Zoran Krstić³

¹Military Medical Academy, Serbia

²University of Defence, Serbia

³Belgrade University, Serbia

The aim of this study was to evaluate damage of the kidney with Tc99m-DMSA scintigraphy in children with Antenatal Hydronephrosis (ANH) and the influence of other postnatal associated diagnoses on abnormal DMSA findings. DMSA scintigraphy in 54 children (17 girls and 37 boys), aged from 2 months to 5 years (median 11 months) with 66 antenatally detected hydronephrotic Renal Units (RU) (42 unilateral hydronephrosis: 29 boys and 13 girls and 12 bilateral hydronephrosis: 8 boys and 4 girls) was done. Male/female ratio was 2.2: 1, unilateral/bilateral hydronephrosis ratio was 4:1. Hydronephrosis classified into three groups according to ultrasound measurement of the Antero-posterior Pelvic Diameter APD): Mild (APD 5-9.9 mm) was present in 13/66 RU, moderate (APD 10-14.9 mm) in 25/66 RU and severe (APD \geq 15 mm) in 28/66 RU. Simple hydronephrosis was present in 15 RU and postnatal associated clinical diagnosis were Vesicoureteral Reflux (VUR) in 21, Pelvi Ureteric Junction (PUJ) obstruction in 7, pyelon et ureter duplex in 11, megaureter in 11 and posterior urethra valves in 1 RU, respectively. Static renal scintigraphy was performed 2 to 3 hours after intravenous (iv) injection of 99m Technetium labeled Dimercaptosuccinic acid (DMSA) using a dose of 50 μ Ci (1.85 MBq/kg; minimal dose: 300 μ Ci). Four views (posterior, left and right posterior oblique and anterior) were obtained with a single head gamma camera orbiter filtered with high resolution parallel whole collimator. All images were stored in a Pegasys computer with a matrix size of 256 \times 256. The Relative Kidney Uptake (RKU) between the left and right kidney was calculated as an average number counts from anterior and posterior view. Renal pathology was defined as inhomogeneous or focal/multifocal uptake defects of radio pharmaceutical in hydronephrotic kidney or as split renal uptake of <40% and poor kidney function was defined as split renal uptake <10%. Descriptive and analytical statistics (SPSS version 20.0) was performed. Analytical statistics implied the non-parametric Mann-Whitney test for determination of statistically significant difference between the normal and pathological findings on DMSA scan. The default level of significance was p<0.05. DMSA scintigraphy findings in children with ANH were: Decreased or enlarged kidney with inhomogeneous kidney uptake radiopharmaceutical in 22, irregular shape kidney with inhomogeneous accumulation of radiopharmaceutical in 3, connected (fused) kidney in 1 patient and poorly or nonvisual kidney in 14 RU respectively (total 40/66 renal units with pathological DMSA finding (60.6%)). Relative accumulation in hydronephrotic kidney was less or equal to 40% in 17 renal units, less than 10 in 14 renal units. Inhomogeneous radiopharmaceutical uptake with relative accumulation over 40% was detected in 9 RU. Regular kidney morphology with homogeneous accumulation of radiopharmaceutical (normal DMSA scintigraphy finding) were found in 26/66 renal units (39.4%). Statistically significant correlation between the degree of the hydronephrosis (APD) and DMSA scan finding (p<0.001) and between the degree of the VUR and DMSA scan finding (p=0.002) was established. In our study, other associated diagnosis were not statistically correlated with pathological findings on DMSA scan. On the basis of these results we recommend DMSA scintigraphy in the evaluation renal pathology in children with ANH. Greater number of patients is needed for the estimation of the associated diagnosis (other than VUR) influence on the renal parenchymal damage in children with ANH.

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 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.

ajdinovicboris@gmail.com