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### Voiding urosonography with second-generation ultrasound contrast agent for diagnosis of vesicoureteric reflux: First local pilot study

**Background:** Vesicoureteric reflux (VUR) is an important association of pediatric urinary tract infection (UTI) found in 30-50% of all children presenting with first UTI. Contrast-enhanced voiding ultrasonography (ceVUS) has become an important radiation-free method for VUR detection in children. Its sensitivity in detecting VUR has greatly improved due to the development of the contrast-specific ultrasound techniques and the introduction of the second-generation ultrasound contrast agent, superseding the diagnostic accuracy of standard radiological procedures.

**Aim:** To discuss the first local pilot study performed in our institution on detection of vesicoureteric reflux by contrast-enhanced voiding ultrasonography with second- generation agent (SonoVue, Bracco, Italy).

**Material & Methods:** A total of 118 children with 236 nephroureteral units (NUUs) were evaluated using ceVUS. Age range 2 months to 18 years (mean: 6.4±4.9). Indications for ceVUS were acute pyelonephritis and recurrent urinary tract infection (62 children), hydronephrosis/small kidney (20 children) and control investigation for VUR during conservative management or after endoscopic correction (36 children). The majority of examinations were well tolerated without any adverse incident. One 3 months old girl where massive V grade VUR was detected, developed acute pyelonephritis as complication of the catheterization. Three children had painful micturation in the following few days, but no infection.

**Results:** VUR was shown in 62 (52.5%) children in 97/236 (41%) NUUs. It was unilateral in 47 and bilateral in 25 children. In 52 NUUs VUR was grade II/V in 26 Grade III/V, in 16 grade IV/V and in 3 grade V respectively. Urethra was shown in 90/118 children and in all boys, without major pathological finding. In 9 girls spinning top urethra has been shown. Subsequent urodynamic studies performed in 5 of them, revealed functional bladder problem.

**Conclusions:** Contrast-enhanced voiding urosonography using intravesical second generation ultrasound contrast agent could be recommended as a valid alternative diagnostic modality for detecting vesicoureteral reflux and evaluation of the distal urinary tract in children, based on its radiation-free, highly efficacious, reliable, and safe characteristics.

#### Biography

Dafina Kuzmanovska has held the position of a full-time Nephrologist at University Children's Hospital in Skopje, since achieving her subspecialisation in Paediatric Nephrology in 1986. In 1997 she became Professor in Paediatrics at the Faculty of Medicine and in 2002 full Professor in Paediatrics. She has been on a position of Head of Cathedra of Pediatrics in the period 2009-2013 and since September 2014 she is Emeritus Professor. During her career she has written more than 100 research and professional papers published in recognised international journals and on major conferences and co-authored some textbooks.

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