

Title: Different guidelines for imaging in children with febrile urinary tract infections**Boris Ajdinovic Boris Ajdinovic**

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The best approach to imaging of a child with febrile Urinary Tract Infection (UTI) is highly debatable. Renal Ultra-Sound (US), a Voiding Cystourethrogram (VCUG) and renal Dimercaptosuccinic acid (DMSA) scintigraphy are the most commonly used imaging methods.

UTI are common in childhood and most children recover without complications. Use of imaging to check for abnormalities or complications therefore needs to be targeted carefully.

Because a renal US is noninvasive and may give supplemental information about a child's risk for lower tract infections by showing bladder abnormalities, a renal US should be initially ordered study in children with UTI. In 2011 The American Academy of Pediatrics (AAP) recommended that renal US be performed after first febrile UTI but that VCUG should be obtained only if there are renal abnormalities, or after second febrile UTI. Significant controversy surrounded this recommendation and many pediatric urologists disagreed with the APP guidelines. Obtaining a VCUG with first UTI in all male patients, females younger than 3 years, children clinically suspected of having pyelonephritis and those with US abnormalities has been recommended ("bottom-up" approach).

Approximately 50% of patients younger than 1 year who present with a febrile UTI have VUR, compared with 33% patients older than 1 year. Of patients younger than 1 year with VUR, 50% will have evidence of renal lesions on DMSA scintigraphy; patients older than 1 year with VUR have a 33% chance of having renal scarring. This has led some centers to use DMSA scintigraphy as the initial test after a child has a febrile UTI. It is proposed that 50% of VCUG could be avoided by reserving the study for patients with demonstrated renal injury.

Because of the risks and cost of the VCUG test, as well as its low yield (<10%) for clinically significant (i.e., high-grade) VUR, many have advocated obtaining VCUG selectively. Another approach to imaging is the so-called "top-down" approach, where DMSA cortical renal scintigraphy is obtained after initially US.

Advocates of this approach cite that it focuses on identification of renal scarring, the long-term adverse effect that we are hoping to avoid, regardless of whether reflux is present or not. A normal renal scintigraphy allows to safely dismissing the child without programming further investigation(s) as outpatient. On the contrary, in case of true acute pyelonephritis, investigation for VUR can be scheduled without waiting for a relapse. Diffusion weighted imaging and diffusion tensor imaging are promising noninvasive MRI modalities for identification and characterization of UTI and pyelonephritis.

Biography

Boris Ajdinović is MD, PhD, civilian, nuclear medicine specialist, since 2004. He is Head of The Institute of Nuclear Medicine at the Medical Military Academy (MMA); since 2011 the head of The Group of Diagnostic Institutes at the MMA; retired 2021. He has finished Nuclear medicine specialization in 1984. Since then he was on full time job in Institute of nuclear medicine MMA. Beside routine work, his work particularly is applying nuclear medicine methods in nephrourology.