



ORIGINAL ARTICLE

Voiding urosonography with second-generation contrast as a main tool for examining the upper and lower urinary tract in children. Pilot study[☆]



M. Fernández-Ibieta^{a,*}, C. Parrondo-Muiños^b, L.C. Fernández-Masaguer^c,
E. Hernández-Anselmi^d, V. Marijuán-Sauquillo^d, M. Ramírez-Piqueras^d,
Y. Argumosa-Salazar^d, T. Moratalla-Jareño^d, M.S. Fernández-Córdoba^d

^a Servicio de Cirugía Pediátrica, Hospital Clínico Universitario Virgen de la Arrixaca, Murcia, Spain

^b Servicio de Radiología, Hospital General Universitario de Albacete, Albacete, Spain

^c Pediatría, Centro de Salud Madrigueras-Villamalea, Albacete, Spain

^d Servicio de Cirugía Pediátrica, Hospital General Universitario de Albacete, Albacete, Spain

Received 7 June 2015; accepted 5 November 2015

Available online 2 March 2016

KEYWORDS

Urosonography;
Posterior urethral
valves;
Echocystography;
Vesicoureteral reflux

Abstract

Introduction: In this series, we analyze the diagnostic efficacy of serial voiding urosonography (VUS) with second-generation contrast, combined harmoniously and specifically with contrast technology, in the examination of the urinary tract in children. This examination includes the diagnosis and follow-up for vesicoureteral reflux (VUR) and urethral disorders, mainly those of the posterior urethral valve (PUV).

Patients and methods: After obtaining informed consent, a prospective study was conducted using urosonography with second-generation contrast (sulphur hexafluoride microbubbles, SonoVue®) from November 2014 to October 2015 (1 year) in pediatric patients with suspected VUR or PUV impairment. For patients with a high suspicion of VUR and in cases of PUV, we also conducted simultaneous voiding cystourethrography (VCUG).

Results: We studied 40 patients (80 renal units) between the ages of 2 months and 13 years (median age, 14 months). The indication for the test was a suspected VUR (36 patients, group A) and PUV follow-up (4 patients, group B). The test was correlated with VCUG in 16 patients (12 cases with high suspicion of VUR in group A and with 4 cases of PUV in group B). The visualization of the urethra was appropriate in cases of dilation or urethral stricture. For 3 of these patients with bilateral VUR demonstrated in the serial VUS, the VCUG showed only unilateral VUR in 2 of the patients and no VUR in 1 of the patients ($\kappa = .73$).

[☆] Please cite this article as: Fernández-Ibieta M, Parrondo-Muiños C, Fernández-Masaguer LC, Hernández-Anselmi E, Marijuán-Sauquillo V, Ramírez-Piqueras M, et al. Urosonografía miccional con contraste de segunda generación como herramienta primaria en el estudio de la vía urinaria superior e inferior en pediatría. Estudio Piloto. Actas Urol Esp. 2016;40:183–189.

* Corresponding author.

E-mail address: mfndezibieta@hotmail.com (M. Fernández-Ibieta).

PALABRAS CLAVE

Urosonografía;
Válvulas de uretra
posterior;
Ecocistografía;
Reflujo vesicoureteral

Discussion: We have shown that the visualization of the urethra is no longer a limitation and that serial VUS can be superior to conventional VCUG in diagnosing VUR.

© 2015 AEU. Published by Elsevier España, S.L.U. All rights reserved.

Urosonografía miccional con contraste de segunda generación como herramienta primaria en el estudio de la vía urinaria superior e inferior en pediatría. Estudio Piloto

Resumen

Introducción: En esta serie queremos analizar la eficacia diagnóstica de la urosonografía miccional seriada (UMS) con contraste de segunda generación, asociado a tecnología en modo armónico y específica para contraste, en el estudio de la vía urinaria en pediatría: diagnóstico y seguimiento de RVU, y también de anomalías uretrales, principalmente de las válvulas de la uretra posterior (VUP).

Pacientes y métodos: Se realizó, previo consentimiento informado, estudio prospectivo con urosonografía con contraste de 2.^a generación (microburbujas de hexafluoruro de azufre, SonoVue®) en el periodo comprendido entre noviembre de 2014 a octubre de 2015 (un año) en pacientes pediátricos con sospecha de RVU, o alteración de la vía urinaria inferior (VUP). En pacientes con alta sospecha de RVU, y en los casos de VUP, se realizó además cistouretrografía miccional (CUMS) simultánea.

Resultados: Fueron estudiados 40 pacientes (80 unidades renales) de entre 2 meses y 13 años (mediana 14 meses). La indicación de la prueba fue: sospecha de RVU (36 pacientes, grupo A) y seguimiento de VUP (4 pacientes, grupo B). Se correlacionó con CUMS en 16 pacientes (12 casos con alta sospecha de RVU en el grupo A y con los 4 casos de VUP del grupo B). La visualización de la uretra fue adecuada en los casos de dilatación o estenosis uretral. En 3 de estos pacientes con RVU bilateral en UMS en la CUMS solo se apreciaba de forma unilateral en 2 de los casos y sin RVU en uno; $\kappa = 0,73$.

Discusión: Hemos comprobado que la visualización de la uretra ya no es una limitación, y que la UMS puede ser superior a la CUMS convencional en el diagnóstico del RVU.

© 2015 AEU. Publicado por Elsevier España, S.L.U. Todos los derechos reservados.

Introduction

The echocystography or serial voiding urosonography (VUS) has been, in the past decade, widely used in pediatric urology and compared to conventional serial voiding cystography (VCUG). Good sensitivity and specificity of VUS for vesicoureteral reflux (VUR) was defined (compared to VCUG), close to 100% according to some authors (95% CI: 96.5–100%), and around 92% according to other studies.^{1–3} However, VCUG remains the most widely used technique for the diagnosis of VUR, despite the child's exposure to radiation.^{3–5} The visualization of the morphology of the male urethra was not adequate with first generation contrasts for VUS, based on derivatives of galactose (Levovist® Schering, Berlin, Germany).^{1–5} However, there exist recent technical advances that allow for greater image definition: a specific second-generation contrast for VUS, based on microbubbles of sulfur hexachloride (SonoVue®, Bracco, Milan, Italy), and an ultrasound scanner equipped with specific software for contrast studies (called harmonic, based on the nonlinear propagation of sound waves).^{1–5} Although the European guidelines⁶ do not yet advise the VUS as the first examination in the diagnosis of VUR in males (recommendations based on the early works with Levovist®), there are recent works^{7,8} with a large number of pediatric patients, which

demonstrate higher sensitivity for detecting VUR with this technique and this software.

In this paper we describe the implementation of the VUS (with SonoVue® and ultrasound scanners with harmonic software) as a primary tool for the diagnosis and study of the urinary tract in children, not only of the VUR, but also of the urethra, in a pilot program to reduce the ionizing radiation to which these children are exposed during their childhood.

Material and methods

This is a prospective pilot study on the implementation of a new technique, the second-generation contrast USM in harmonic mode, in a third-level hospital. We evaluated the quality of the images of the urinary tract, with special emphasis on the study of VUR and the definition of the male urethra. Within the pilot study, parallel USM and VCUG studies were conducted, in the same morning (after the change of probe and location of the patient) and by a single radiologist (CPM) in patients with high suspicion of VUR and in all patients with posterior urethral valves (PUV). All patients in whom it was intended to perform imaging studies of the urinary tract, due to suspicion of VUR, or alteration of the urethra (mainly PUV) in the period of implementation of the technique were included: November

Download English Version:

<https://daneshyari.com/en/article/3845179>

Download Persian Version:

<https://daneshyari.com/article/3845179>

[Daneshyari.com](https://daneshyari.com)