

Use of sedative drugs at reducing the side effects of voiding cystourethrography in children

Anahita Alizadeh, Maryam Naseri¹, Yalda Ravanshad², Shahabaddin Sorouri³, Malihe Banihassan¹, Anoush Azarfar⁴

Department of Clinical Toxicology, Imam Reza Hospital, School of Medicine, Mashhad University of Medical Sciences, Mashhad, ¹Departments of Pediatrics, ³Internal Medicine and ⁴Pediatric Nephrology, School of Medicine, Mashhad University of Medical Sciences, Mashhad, ²Clinical Research Unit, Mashhad University of Medical Sciences, Mashhad, Iran

Background: Imaging of the kidneys and urinary tract has a significant and critical role for diagnosis of genitourinary system diseases. Although technological progress goes toward less invasive approaches, some of the current methods are still invasive and annoying. Voiding cystourethrography (VCUG) is the best and most accurate method for diagnosis and grading of vesicoureteral reflux. VCUG is a distressful procedure that gives serious anxiety and pain in a large proportion of children and fear for parents; therefore, using effective sedative drugs with the least side effects is necessary and should be considered. **Materials and Methods:** In this review article, importance and efficacy of different drugs before catheterization VCUG be compared in the base of literature survey on EMBASE, PubMed, and Cochrane source. **Results:** We found that the treatment should be based on nonpharmacological and pharmacological methods; nonpharmacological treatment includes the psychological preparation before procedures as a safety precaution with little or no risk modality, as well as reassuring support. The presence of parents during painful procedures cannot alleviate children distress. Pharmacological methods include oral midazolam (0.5 mg/kg) and intranasal use (0.2 mg/kg) that had been used 10 min before the procedure can effect on anterograde amnesia and sedation without considerable effect on accuracy and grade of reflux. Nitric oxide has a shorter recovery time versus midazolam but has a potential risk for deep sedation and may interfere with the child's voiding phase. **Conclusion:** In summary, oral midazolam of 0.5–0.6 mg/kg or 0.2 mg/kg intranasal is acceptable drug that can be used before VCUG.

Key words: Children, cystourethrography, midazolam, sedative

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INTRODUCTION

Voiding cystourethrography (VCUG) is the gold standard for diagnosis and grading of vesicoureteral reflux and other bladder problems as parts of evaluation of the lower and upper urinary tract that mainly used in small infant and children. It is an invasive procedure that should be done in radiology ward by insertion of a catheter, filling bladder with radiopaque material, and after then, the conscious child should be asked to void spontaneously.^[1] There are two types of cystography: traditional or VCUG and direct radioisotopes cystogram both required to catheterization, and VCUG is necessary for male children at the first investigation.^[2-5]

METHODS

In this review article, we evaluate the importance of distress and find the appropriate modalities that can help children, parents, and staff during VCUG performance by comparison of published literatures in EMBASE, PubMed, and Cochrane sources to catch existing research work on sedation in VCUG and related drugs, such as midazolam, nitric oxide, propofol, and chloral hydrate.

Voiding cystourethrography and sedation

Distress is a more comprehensive term beyond of just pain stimulus. Incidence of serious distress may occur in 61%–71% of cases during VCUG that may occur in different stages from entering room, catheterization, filling of bladder, voiding, and leaving room.^[6] It is

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Address for correspondence: Dr. Yalda Ravanshad, Clinical Research Development Center, Ghaem Hospital, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: ravanshady@mums.ac.ir

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