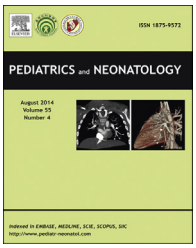
Pediatrics and Neonatology (2014) 55, 256–261

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://www.pediatr-neonatol.com



ORIGINAL ARTICLE

Renal Excretion of Water-soluble Contrast Media After Enema in the Neonatal Period

Hee Sun Kim [a], Bo-Kyung Je [a,*], Sang Hoon Cha [a], Byung Min Choi [b], Ki Yeol Lee [a], Seung Hwa Lee [a]

[a] Department of Radiology, Korea University Hospital, Ansan, Gyeonggido, Republic of Korea
[b] Department of Pediatrics, Korea University Hospital, Ansan, Gyeonggido, Republic of Korea

Received Jul 11, 2012; received in revised form Dec 7, 2012; accepted Jul 29, 2013
Available online 2 December 2013

Key Words
contrast enema;
contrast media;
diatrizoate meglumine;
ileus;
infant;
intestinal obstruction;
newborn;
renal excretion;
water-soluble iodinated

Background: When abdominal distention occurs or bowel obstruction is suspected in the neonatal period, a water-soluble contrast enema is helpful for diagnostic and therapeutic purposes. The water-soluble contrast medium is evacuated through the anus as well as excreted via the kidneys in some babies. This study was designed to evaluate the incidence of renal excretion after enemas using water-soluble contrast media and presume the causes.

Methods: Contrast enemas using diluted water-soluble contrast media were performed in 23 patients under 2 months of age. After the enema, patients were followed with simple abdominal radiographs to assess the improvement in bowel distention, and we could also detect the presence of renal excretion of contrast media on the radiographs. Reviewing the medical records and imaging studies, including enemas and consecutive abdominal radiographs, we evaluated the incidence of renal excretion of water-soluble contrast media and counted the stay duration of contrast media in urinary tract, bladder, and colon.

Results: Among 23 patients, 12 patients (52%) experienced the renal excretion of water-soluble contrast media. In these patients, stay-in-bladder durations of contrast media were 1-3 days and stay-in-colon durations of contrast media were 1-10 days, while stay-in-colon durations of contrast media were 1-3 days in the patients not showing renal excretion of contrast media. The Mann-Whitney test for stay-in-colon durations demonstrated the later evacuation of contrast media in the patients with renal excretion of contrast media ($p = 0.07$). The review of the medical records showed that 19 patients were finally diagnosed as intestinal diseases, including Hirschsprung's disease, meconium ileum, meconium plug syndrome, and small bowel atresia or stenosis. Fisher's exact test between the presence of urinary excretion and intestinal diseases indicated a statistically significant difference ($p = 0.04$).

* Corresponding author. Department of Radiology, Korea University Hospital, #123, Jeokgeum-ro, Danwon-gu, Ansan-si, Gyeonggi-do 425-707, Republic of Korea.
E-mail address: radje@korea.ac.kr (B.-K. Je).

1875-9572/$36 Copyright © 2013, Taiwan Pediatric Association. Published by Elsevier Taiwan LLC. All rights reserved.
http://dx.doi.org/10.1016/j.pedneo.2013.07.012

Conclusion: The intestinal diseases causing bowel obstruction may increase the water-soluble contrast media's dwell time in the bowel and also increase urinary excretion.
Copyright © 2013, Taiwan Pediatric Association. Published by Elsevier Taiwan LLC. All rights reserved.

1. Introduction

Diatrizoate meglumine is a water-soluble contrast medium for the gastrointestinal (GI) tract. Usually, it is indicated for the early postoperative assessment following GI surgery and the evaluation of suspected GI perforation.[1] This water-soluble contrast medium has been used in neonates for the treatment of uncomplicated meconium ileus, and it was believed to loosen the viscous, tenacious meconium through its hyperosmolar and water-soluble properties. Large volumes of fluid are drawn into the bowel, freeing the meconium and allowing it to pass through the rectum.[2–6] The patients who undergo water-soluble contrast enemas are followed with simple abdominal radiographs to evaluate the improvement in bowel distention and the effectiveness of enema. In some patients, we noticed that the urinary tracts, mainly urinary bladders, were opacified on the radiographs.

In this study, we evaluated the cases of water-soluble contrast enema in patients less than 2 months of age and divided them into two groups according to the presence of opacified urinary tracts on follow-up simple abdominal radiographs, which suggests renal excretion of contrast media. Then, we investigated the differences between the two groups and the causes of urinary tract opacification.

2. Methods

Since April 2004, 32 patients less than 1 year of age underwent contrast enemas with water-soluble contrast media at our institute: 10 examinations in 2004, four in 2005, two in 2006, two in 2007, 11 in 2008, two in 2009, and one in 2011. All studies were performed after obtaining documented informed consent from the parents or legal guardians. With retrospective review of the medical records and imaging studies, we excluded patients with uncertain diagnosis, patients lost to follow-up, patients with bowel perforation, and patients whose follow-up abdominal radiographs were not performed until the time when the instilled contrast media were completely evacuated. Finally, we enrolled 23 patients in this study and patients' demographics are presented in Table 1.

All 23 patients underwent water-soluble contrast enemas for severe abdominal distention or a lack of fecal evacuation in spite of saline or glycerin enemas. The contrast material used was diatrizoate meglumine and diatrizoate sodium solution (Gastrografin; Bayer Schering Pharma, Santa Rosa, Spain). It is a lemon-flavored, water-soluble, hyperosmolar (1750 mOsm/L), iodinated radiopaque contrast medium containing amidotrizoic acid 597 mg/mL, meglumine 159 mg/mL, sodium hydroxide 6 mg/mL, and bound iodine 367 mg/mL. Owing to the hyperosmolarity of the contrast media, patients received intravenous fluids to prevent any possible imbalance of fluid or electrolytes prior to the study. Contrast enemas were performed with the following procedure. A Foley catheter was placed in the rectum without ballooning, and the buttocks were strapped tightly together to prevent leakage of contrast. At the beginning of the study, all patients were positioned for a lateral view in order to evaluate the presence of the narrowing segment in the rectum

Table 1 Demographics of 23 patients according to excretory pathway of contrast.

Group			R group ($N = 12$)	NR group ($N = 11$)	p
Sex	Male	12 (52)	6 (50)	6 (55)	
	Female	11 (48)	6 (50)	5 (45)	
Gestational age	(wk)		28～41 (36 ± 2)	26～41 (35 ± 3)	0.33*
Maturity	Preterm	10 (43)	5 (42)	5 (45)	
	Term	19 (57)	7 (58)	6 (55)	
Birth weight	(g)		1340～4000 (2616 ± 507)	976～3840 (2296 ± 573)	0.24*
Delivery type	Vaginal	8 (35)	6 (50)	2 (18)	
	Cesarean	15 (65)	6 (50)	9 (82)	
Age at enema			0～30 days Birth～1 wk 9 (75) 1 wk～1 mo 2 (17) 1 mo～ 1 (8)	1～65 days Birth～1 wk 5 (45.5) 1 week～1 mo 1 (9) 1 mo～ 5 (45.5)	

The numbers in parentheses represent the percentages.
*Student *t* test.

Download English Version:

https://daneshyari.com/en/article/4175030

Download Persian Version:

https://daneshyari.com/article/4175030

Daneshyari.com