

Occult Chronic Functional Constipation: An Overlooked Cause of Reversible Hydronephrosis in Childhood

K Akl

ABSTRACT

Objective: To find out if there was any relationship between occult chronic functional constipation and transient hydronephrosis.

Methods: A retrospective study of patients referred to the renal service at Jordan University Hospital from January 2011 to December 2014 because of urological complaints and found to have hydronephrosis associated with undiagnosed constipation. The follow-up was from 3 months to 5 years. Children with hydronephrosis associated with undiagnosed chronic functional constipation were included. Children known to have constipation were excluded. The medical records were checked for the patients' history of stool habits and their physical examination findings, urine analysis, urine culture, and renal ultrasonography. Occult constipation was defined as the existence of constipation without the knowledge of the parents or the referring physician in patients who did not fulfil the Rome III criteria, but whose complaints, including hydronephrosis, were resolved with laxative treatment.

Results: Out of 93 patients with urologic presentations, 9 were excluded because of the previous diagnosis of constipation. Of the remaining patients, 84 were diagnosed to have occult chronic functional constipation. Renal ultrasonography was done for 43 patients. Hydronephrosis was found in 9/43 (21.0%) patients. Hydronephrosis resolved in all the nine cases after laxative treatment. The hydronephrosis was intermittent in 2/9 cases coinciding with noncompliance with the management. The associated urinary findings included abdominal pain, flank pain, lower urinary tract symptoms and urinary tract infection found in 3/43, 11/43, 39/43 and 15/43 patients, respectively.

Conclusion: Occult chronic functional constipation is an overlooked cause of reversible hydronephrosis in children.

Keywords: Constipation, hydronephrosis, occult.

INTRODUCTION

The aim of this study was to find out if there was a relationship between transient hydronephrosis and occult chronic functional constipation in children. Functional constipation in childhood accounts for the majority of all constipation cases beyond the neonatal period.

The gastrointestinal tract and genitourinary tract, which share common innervations, and embryological origin have a close proximity to each other. The disorders of one affect the other (1, 2). Chronic constipation is known to be associated with the lower urinary tract

symptoms (LUTS), childhood urinary tract infections (UTI) (2) and vesicoureteral reflux (VUR) (3). The co-existence of urinary symptoms along with constipation was initially named dysfunctional voiding, then Koff *et al* coined the term dysfunctional elimination syndrome (DES) in 1998 (2). More recently, in the International Children's Continence Society in the 2014 updated report, the term bladder and bowel dysfunction (BBD) was deemed more appropriate (4). The management of VUR will never be complete without treating the associated chronic constipation (2).

However, hydronephrosis has rarely been emphasized except in overt chronic constipation, and isolated case reports (5).

SUBJECTS AND METHODS

This is a retrospective study of consecutive patients referred to the renal service at Jordan University Hospital (a tertiary care centre) from January 2011 to December 2014 because of urological complaints and found to have hydronephrosis associated with undiagnosed constipation. The follow-up was from 3 months to 5 years. All the patients were followed up by one physician. Children with hydronephrosis associated with undiagnosed chronic functional constipation were included. Children known to have neurogenic bladder or known to have constipation were excluded. Their medical records were checked for their history of stool habits and their physical examinations for abdominal masses, rectal faecal impaction, urine analysis, urine culture, and ultrasound of the kidneys before and after treatment. Their management included lactulose at a dose of 1 ml/kg PO bid, and a high fibre diet. The following definitions were used.

Occult constipation: The existence of constipation without the knowledge of the parents or the referring physician in patients who did not fulfil the Rome III criteria, but had complaints (including hydronephrosis) which were resolved with laxative treatment.

Rome III criteria for functional constipation in children: At least two of the following were present for at least 1 month in infants and toddlers, and 2 months in children aged 4 to 18 years: history of retentive posturing or excessive volitional stool retention, at least one of faecal incontinence per week, two or fewer defecations per week, history of painful or hard bowel movements, presence of a large faecal mass in the rectum, and history of large-diameter stools that may obstruct the toilet (5–7). Hydronephrosis was defined as pelvicalyceal dilatation of more than 5 mm. Institutional Hospital Board approval was obtained.

RESULTS

Of the 93 patients with urologic presentations such as flank pain/LUTS (dysuria, increased urinary frequency, enuresis), 9 were excluded because of the presence of neurogenic bladder. Of the remaining 84 patients diagnosed to have occult chronic functional constipation, 43 patients had a renal ultrasound. Hydronephrosis was found in 9/43 (21.0%) patients. Hydronephrosis resolved in all the nine cases after treatment with lactulose. In 1/9

calyceal dilatation disappeared with persistence of mild pelvic dilatation. The hydronephrosis was intermittent in 2/9 cases coinciding with the non-compliance with the management. The associated urinary findings included abdominal pain, flank pain, LUTS and UTI found in 2/9, 1/9, 8/9 and 1/9 patients with hydronephrosis, and in 1/34, 10/34, 31/34 and 14/34 patients without hydronephrosis, respectively. In the group who had hydronephrosis, their ages ranged from 6 months to 16 years, males 4/9, females 5/9. Hydronephrosis was on the right, left and bilateral in 3/9, 4/9 and 2/9, respectively.

The presence of constipation was neither known to the mother nor to the referring physician. In four of the children, the parents were only aware of an increased frequency of passing foul smelling flatus with daily bowel movements.

Following improvement with lactulose, all the patients did not adhere to the high fibre diet resulting in the recurrence of the hydronephrosis in 2/9 patients.

DISCUSSION

The purpose of the present study was to report on the transient hydronephrosis associated with occult chronic functional constipation. The overt cases of chronic functional constipation are usually referred to the gastroenterologist. The occult cases are frequently missed by the primary care physician and referred to paediatric nephrourologist with flank pain or LUTS such as acute urinary retention, enuresis, overactive bladder and UTIs (3, 8–11).

The symptoms of overt constipation are obvious. The most common symptoms of overt constipation were hard stools, infrequent defecation and abdominal pain in 40% of the cases reported from Jordan (12). In a recent study from Iran, the most common manifestations of constipation were large and hard stools in 93.7%, painful defecation in 92.3% and withholding behaviour in 91.9% cases (13). In a report by O'Regan *et al*, denial of constipation by parents was present in 50% of mothers (11). In 100% of our cases, neither the parents nor the referring physician were aware that the children had constipation.

When the history of constipation is denied by parents, Rome III criteria may be used (4, 5). Unfortunately, not all physicians use the Rome III criteria. In a survey in Saudi Arabia, only 61.2% of the physicians were aware of the Rome III criteria for functional constipation (14). Even if used, Rome III criteria may miss the cases of occult constipation as in our study, and the diagnosis of occult constipation rests on the patients' response to

laxatives. The present study showed that Rome III criteria do not detect occult constipation in cases presenting with urologic complaints or passing foul smelling flatus which may be the only complaint in such patients, as it occurred in some of our patients.

The European Society for Pediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN), and the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN) published an evidence-based guideline in 2014 based on the literature. It was found that evidence does not support the use of digital rectal examination, abdominal radiography or rectal ultrasound for the diagnosis of functional constipation (15).

Occult chronic functional constipation has been associated with recurrent abdominal pain in childhood (16, 17). Our patients had more of urologic than abdominal complaints.

The co-existence of urinary complaints and constipation is referred to as BBD. The management of bowel and urinary symptoms should be done at the same time (1, 18–21). Bladder and bowel dysfunction is a spectrum of disorders. It is more common in girls, as it was in our patients.

The previous reports dealt with dilated upper tracts in children with overt chronic constipation including fecalomas (22–25). There had been no previous reports of transient childhood hydronephrosis associated with occult chronic functional constipation.

Hydronephrosis may result from fecal masses compressing the bladder neck and ureter resulting in an overactive bladder with VUR (18) or ureteral obstruction, respectively (23). O'Regan stressed the importance of BBD in the pathogenesis of primary VUR (10). Chen *et al* found BBD in 36% and 20% of girls and boys with unilateral VUR, respectively (26). In our study, there was no correlation between the symptoms in those children with occult constipation and the presence of hydronephrosis.

In our patients, the resolution of hydronephrosis, flank pain and LUTS was directly related to the management of constipation. Proper management results in the resolution of the hydronephrosis, only to come back again after non-compliance with the management. The presence of intermittent hydronephrosis should alert the clinician to the possibility of an underlying occult constipation. This is particularly important if the hydronephrosis switches sides without an apparent explanation. Parents assume that few months of treatment of constipation is adequate, while the fact is that

it should be permanent in the form of high fibre diet, drinking adequate water and the avoidance of a sedentary lifestyle. Having a daily bowel movement does not mean that there is no constipation.

The lessons learnt from the current study include the importance of parental education in the form of adequate and repeated advice regarding the management of occult constipation. It is important to treat the constipation before resorting to further imaging studies to detect VUR or ureteral obstruction as both may be secondary to occult constipation. Managing constipation will resolve the issue in patients where constipation is the culprit, and will help those who have an underlying anatomical abnormality that needs surgery. In the latter, missing the diagnosis of occult constipation may result in failure of the surgical intervention (2). The limitations of this study include being retrospective and the small number of patients' sample. A future prospective randomized controlled study is in order to clarify the issue of occult constipation in children with urological complaints.

CONCLUSION

Occult chronic functional constipation in children is an overlooked important cause of reversible hydronephrosis. A high index of suspicion leads to proper diagnosis which eliminates unnecessary investigations.

REFERENCES

1. Burgers R, Liem O, Canon S, Mousa H, Benninga MA, Di Lorenzo C *et al*. Effect of rectal distention on lower urinary tract function in children. *J Urol* 2010; **184**: 1680–5.
2. Koff SA, Wagner TT, Jayanthi VR: The relationship among dysfunctional elimination syndromes, primary vesicoureteral reflux and urinary tract infections in children. *J Urol* 1998; **160** (3 pt 2): 1019–22.
3. Averbek MA, Madersbacher H. Constipation and LUTS—how do they affect each other? *Int Braz J Urol* 2011; **37**: 16–28.
4. Austin PF, Bauer SB, Bower W, Chase J, Franco I, Hoebeke P *et al*. The standardization of terminology of lower urinary tract function in children and adolescents: update report from the Standardization Committee of the International Children's Continence Society. *J Urol* 2014; **191**: 1863–5.
5. Ruoss KA, O'Sullivan R. Chronic constipation causing obstructive uropathy in an adolescent male. *Pediatr Emerg Care* 2008; **24**: 462–3.
6. Hyman PE, Milla PJ, Benninga MA, Davidson GP, Fleisher DF, Taminiou J. Childhood functional gastrointestinal disorders: Neonate/toddler. *Gastroenterology* 2006; **130**: 1519–26.
7. Rasquin A, Di Lorenzo C, Forbes D, Guiraldes E, Hyams JS, Staiano A *et al*. Childhood functional gastrointestinal disorders: child/adolescent. *Gastroenterology* 2006; **135**: 1527–37.
8. Dohil R, Roberts E, Jones KV, Jenkins HR. Constipation and reversible urinary tract abnormalities. *Arch Dis Child* 1994; **70**: 56–7.
9. Loening-Baucke V. Urinary incontinence and urinary tract infections and their resolution with treatment of chronic constipation of childhood. *Pediatrics* 1997; **100**: 228–32.
10. O'Regan S, Schick E, Hamburger B, Yazbeck S. Constipation associated with vesicoureteral reflux. *Urology* 1986; **28**: 394–6.

11. O'Regan, Yazbeck S. Constipation: a cause of enuresis, urinary tract infection, and vesicoureteral reflux in children. *Med Hypotheses* 1985; **17** (4): 409–13.
12. Altamimi E. Clinical characteristics of pediatric constipation in south Jordan. *Pediatr Gastroenterol Hepatol Nutr* 2014; **17**: 155–61.
13. Dehghani SM, Kulouee N, Honar N, Imanieh MH, Haghighat M, Javaherizadeh H. Clinical manifestations among children with chronic functional constipation. *Middle East J Dig Dis* 2015; **7**: 31–5.
14. Hasosah M, Telmesani A, Al-Binali A, Sarkhi A, Alghamdi S, Alquair K et al. Knowledge and practice styles of pediatricians in Saudi Arabia regarding childhood constipation. *J Pediatr Gastroenterol Nutr* 2013; **57**: 85–92.
15. Tabbers MM, Di Lorenzo C, Berger MY, Faure C, Langendam MW, Nurko S et al. Evaluation and treatment of functional constipation in infants and children: Evidence base recommendations from ESPGHAN and NASPGHAN. *J Pediatr Gastroenterol Nutr* 2014; **58**: 258–74.
16. Gijbers C, Kneepkens C, Vergouwe Y, Büller HA. Occult constipation: faecal retention as a cause of recurrent abdominal pain in children. *Eur J Pediatr* 2014; **173**: 781–5.
17. Eidlitz-Markus T, Mimouni M, Zeharia A, Nussinovitch M, Amir J. Occult constipation: a common cause of recurrent abdominal pain in childhood. *Isr Med Assoc J*. 2004; **6**: 677–80.
18. Halachmi S, Farhat W. The impact of constipation on the urinary tract system. *Int J Adolesc Med Health* 2008; **20**: 17–22.
19. Nevés T, von Gontard A, Hoebeke P, Hjalmas K, Bawer S, Bower W et al. The standardization of terminology of lower urinary tract function in children and adolescents: report from the Standardisation Committee of the International Children's Continence Society. *J Urol* 2006 **176**: 314–24.
20. Yazbeck S, Schick E, O'Regan S. Relevance of constipation to enuresis, urinary tract infection and reflux. A review. *Eur Urol* 1987; **13**: 318–21.
21. Burgers RE, Mugie SM, Chase J, Cooper CS, von Gontard A, Rittig CS et al. Management of functional constipation in children with lower urinary tract symptoms: report from the Standardization Committee of the International Children's Continence Society. *J Urol* 2013; **190**: 29–36.
22. Shopfner CE. Urinary tract pathology associated with constipation. *Radiology* 1968; **99**: 865–77.
23. Knobel B, Rosman P, Gewurtz G. Bilateral hydronephrosis due to fecaloma in an elderly woman. *J Clin Gastroenterol* 2000; **30**: 311–3.
24. Paquette EL, Peppas DS. Lower pole ureteral obstruction secondary to fecal impaction in an 8 year old girl. *Tech Urol* 2001; **7**: 299–301.
25. Linard CB, Ravasse P, Casale A. An unusual case of ureteropelvic junction obstruction. *Urology* 2004; **64**: 805–6.
26. Chen JJ, Mao W, Homayoon K, Steinhardt GF. A multivariate analysis of dysfunctional elimination syndrome, and its relationships with gender, urinary tract infection and vesicoureteral reflux in children. *J Urol* 2004; **171**: 1907–10.

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