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

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ABSTRACT

Objective: The aim of this study is to find out if there is 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. Follow up was from three months to five years. Included: Children with hydronephrosis associated with undiagnosed chronic functional constipation. Excluded: children known to have constipation.
The medical records were checked for history of stool habits and 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 fulfill the Rome III criteria, but whose complaints, including hydronephrosis, resolved with laxative treatment.

Results: Out of 93 patients with urologic presentations, nine were excluded because of the previous diagnosis of constipation. Out 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 nine cases post laxative treatment. The hydronephrosis was intermittent in 2/9 cases coinciding with noncompliance with the management. Associated urinary findings included abdominal pain, flank pain, LUTS, and urinary tract infection (UTI) 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

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INTRODUCTION

The aim of this study is to find out if there is a relationship between transient hydronephrosis and occult chronic functional constipation. Functional constipation in childhood accounts for the majority of all constipation cases beyond the neonatal period. The gastrointestinal tract and genitourinary tract, which share a common innervation and embryological origin have a close proximity to each other. Disorders of one affects the other (1, 2). Chronic constipation is known to be associated with 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, 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 associated chronic constipation (2). However, hydronephrosis has rarely been emphasized except in overt chronic constipation, and isolated case reports (5).

Patients and methods

A retrospective study of consecutive patients referred to the renal service at Jordan University Hospital (a tertiary care center) from January 2011 to December 2014 because of urological complaints and found to have hydronephrosis associated with undiagnosed constipation. Follow up was from three months to five years. All patients were followed up by one physician. Included: Children with hydronephrosis associated with undiagnosed chronic functional constipation.

Excluded: children known to have neurogenic bladder, or known to have constipation. The medical records were checked for history of stool habits and physical examination for abdominal masses, rectal fecal impaction, urine analysis, urine culture, and ultrasound of the kidneys before and after treatment. Management included lactulose at a dose of 1 ml/kg PO bid, and a high fiber 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 fulfill the Rome III criteria, but complaints (including hydronephrosis) resolved with laxative treatment.

Rome III criteria for functional constipation in children: At least two of the following were present for at least one month in infants and toddlers. and two months in children age four to 18 years: history of retentive posturing or excessive volitional stool retention, at least one of fecal incontinence per week, two or fewer defecations per week, history of painful or hard bowel movements, presence of a large fecal mass in the rectum, and history of large-diameter stools that may obstruct the toilet (5, 6). Hydronephrosis was defined as pelvicalyceal dilatation of more than 5 mm. Institutional Hospital Board approval was obtained.

RESULTS

Out of 93 patients with urologic presentations such as flank pain/ lower urinary tract symptoms (dysuria, increased urinary frequency, enuresis) nine were excluded because of the presence of neurogenic bladder. Out 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 nine cases post 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 noncompliance with the management. 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, age 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 children parents were only aware of an increased frequency of passing foul smelling flatus with daily bowel movements.

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

DISCUSSION

The purpose of the present study is to report on transient hydronephrosis associated with occult chronic functional constipation. Overt cases of chronic functional constipation are usually referred to the gastroenterologist. Occult cases are frequently missed by the primary care physician and referred to pediatric nephro-urology with flank pain or Lower Urinary Tract Symptoms (LUTS) such as acute urinary retention, enuresis, overactive bladder, and urinary tract infections (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 cases reported from Jordan (12). In a recent study fron 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% (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 child 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 physicians were aware of the Rome III criteria for functional constipation (14). Even if used, Rome III criteria may miss cases of occult constipation as in our study, and the diagnosis of occult constipation rests on the response to laxatives. The present study showed that Rome III criteria does not detect occult constipation in cases presenting with urologic complaints. Passing foul smelling flatus which may be the only complaint in such patients, as 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 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 coexistence of urinary complaints and constipation is referred to as BBD. Management of bowel and urinary symptoms should be done at the same time (1, 18–21) BBD is a spectrum of disorders. It is more common in girls, as in our patients.

Previous reports dealt with dilated upper tracts in children with overt chronic constipation including fecalomas (22–25). There has 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 vesicoureteral reflux (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 symptoms in those children with occult constipation and the presence of hydronephrosis.

In our patients, the resolution of hydronephrosis, flank pain, and LUT symptoms were directly related to the management of constipation. Proper management results in 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 fiber diet, drinking adequate water, and avoidance of a sedentary lifestyle. Having a daily bowel movement does not mean that there is no constipation.

Lessons learnt from the current study include the importance of parental education in the form of adequate and repeated advices regarding the management of occult constipation.

It is important to treat the constipation before resorting to further imaging studies to detect vesicoureteral reflux 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). Limitations of the study include being retrospective, and the small number of patients. 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 of reversible hydronephrosis. A high index of suspicion leading to proper diagnosis avoids unnecessary investigations.

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