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RECURRENT SEVERE ABDOMINAL PAIN IN THE PEDIATRIC PATIENT

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☐ **Abstract—Background: Ureteropelvic junction obstruction (UPJO) is a blockage occurring at the junction of the ureter and the renal pelvis. Pediatric patients with UPJO pose a diagnostic challenge when they present to the emergency department (ED) with severe recurrent abdominal pain if there is not a level of suspicion for this condition. Objectives: Our aim was to review presentation of UPJO to the ED, methods of diagnosis, and treatment of this common but often overlooked condition. Case Report: We report on 2 patients, a 9-year-old and 3-year-old, who had multiple presentations to health care providers and the ED with intermittent and recurrent abdominal pain. Subsequent testing, including ultrasound (US) and computed tomography (CT) with diuretic-recreated symptoms, revealed UPJO. Open pyeloplasty was performed, resulting in complete resolution of symptoms. Conclusions: UPJO is an important diagnosis to consider when patients present to the ED with recurrent abdominal pain. US can be helpful in suspecting the diagnosis, but often CT, magnetic resonance urography, or diuretic scintigraphy is required for confirmation. Diuretics can be used to aid diagnostic testing by reproducing abdominal pain at the time of imaging. Referral to a urologist for open pyeloplasty is definitive treatment for this condition.** © 2014 Elsevier Inc.

☐ **Keywords—ureteropelvic junction obstruction; abdominal pain; hydronephrosis; emergency department; pediatrics**

Dr. Foster was a student at the time the study was conducted.

INTRODUCTION

Abdominal pain is one of the most common presenting complaints in the emergency department (ED) (1,2). Ten percent of school-aged children are affected by recurrent abdominal pain (3). A majority of these cases do not have organic pathology and are thought to be psychosocial (4). However, in a child with severe acute or intermittent abdominal pain, diagnostic tests may be warranted (4). Ureteropelvic junction obstruction (UPJO), a blockage occurring at the junction of the ureter and the renal pelvis, can cause intermittent abdominal pain and deserves consideration when a child presents to the ED with severe or recurrent abdominal pain.

UPJO is the most common cause of antenatal and neonatal hydronephrosis, with an incidence of 1 per 1000−1500 births. Although there is a paucity of data about the incidence of pediatric UPJO, in a study of school-aged children, it was found to be the cause of recurrent abdominal pain in 1 of 100 (3,5). Ultrasonography can be an effective initial screening tool to evaluate for hydronephrosis before more invasive imaging for diagnosis of UPJO (6). Mercaptoacetyltriglycine (MAG-3) diuretic scintigraphy, diuretic renography, or computed tomography (CT) scan and magnetic resonance imaging better illuminate genitourinary anatomy and function and can reproduce obstructive symptoms, therefore, serving as more reliable imaging tools. The gold standard of treatment of

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UPJO in the pediatric population remains open pyeloplasty (5).

CASE REPORT

Case 1

A 9-year-old female presented to the ED at the prompting of her primary care physician after 6 months of intermittent, colicky abdominal pain and multiple evaluations at an outside institution, and planned pediatric gastroenterologist consultation in a month. She had experienced episodes of lower quadrant and suprapubic abdominal pain that would come on suddenly, progress to severe pain, and last several hours with spontaneous resolution. Many episodes would have associated vomiting. As a result, she had missed many days of school during the year. She first visited the ED with a similar episode of abdominal pain. She denied fevers, nausea, vomiting, dysuria, flank pain, or change in stool pattern. Her pain was mainly suprapubic with increasing intermittent episodes of severe pain. Over-the-counter medications provided little relief. No clear triggers had been identified. Her medical history was remarkable only for the abdominal pain. Family history was positive for multiple relatives with irritable bowel syndrome. Notable physical examination findings included a mild tachycardia of 111 beats/min, which normalized as pain resolved. She was well hydrated and her abdominal examination was unremarkable—nontender throughout, no evidence of guarding or rebound, no hepatosplenomegaly was present, and no masses were appreciated. A urinalysis was normal and an abdominal x-ray study showed moderate stool with no evidence of obstruction. She was subsequently discharged with a diagnosis of constipation and placed on a bowel-softening regimen consisting of magnesium citrate followed by stool softener and laxative.

Five days later she returned due to parental concerns that she was not producing much stool and had another episode of abdominal pain with associated nausea and vomiting. Her examination was believed to be consistent with constipation due to a generalized dullness to percussion in all quadrants and formed stool palpable on digital rectal examination. A sodium phosphate enema was provided, resulting in production of a small amount of stool. She was discharged with the diagnosis of constipation and recommendations to follow-up with a gastroenterologist and to continue her bowel regimen.

Two weeks later she returned with recurrent abdominal pain and vomiting and was seen by a third provider in the ED. She reported a moderate degree of pain and her examination was completely normal except for some suprapubic and left lower quadrant tenderness. At this visit, a complete blood count with differential, glucose, electrolytes, liver and pancreatic enzymes, bilirubin, erythrocyte sedimentation rate, and c-reactive protein were obtained. All studies were within normal limits except for a mildly elevated glucose. Urine dipstick was normal and subsequent serum β-hydroxybutyrate and glycosylated hemoglobin were normal. Pelvic and abdominal ultrasounds were obtained. The only detected abnormality was moderate left pyelocaliectasis (Figure 1) with ureteral dilatation to the mid abdomen without definite obstruction and normal ureteral jet. Based on these results, a follow-up appointment was arranged with a pediatric urologist in 1 week, in addition to her previously scheduled appointment with a gastroenterologist.

The next day she returned to the ED and was seen by a fourth provider for severe abdominal pain and vomiting lasting < 2 h and resolving spontaneously. Based on the increasing frequency of episodes of abdominal pain, arrangements were made the following day for contrast CT followed by diuretic-enhanced CT urography. During the imaging studies, a diagnosis of ureteropelvic junction obstruction (UPJO) was confirmed, with both reproduction of the patient's pain post diuretic administration and marked increase in renal pelvis and proximal ureteral dilatation (Figure 2). The patient subsequently underwent open surgical intervention and was found to have a localized stricture due to kinking of the ureter. The narrowed segment was excised and a reduction pyeloplasty was performed. Follow-up MAG-3 diuretic scintography showed fully preserved renal function.

Case 2

A 3-year-old otherwise healthy male presented to his primary care physician with 5 months of intermittent abdominal pain associated with vomiting that seemed to be increasing in frequency. His mother noted that most events occurred at night and began with some anxious behaviors followed by complaints of generalized abdominal

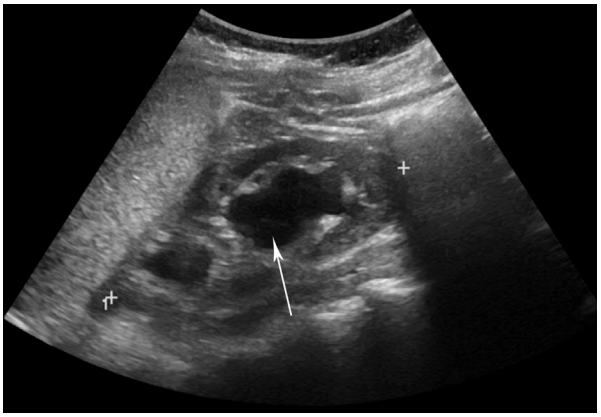

Figure 1. Renal ultrasound. Arrow points to moderate pyelocaliectasis of the left kidney, with the borders of the kidney highlighted by + signs.