

ATYPICAL PRESENTATIONS OF ACUTE APPENDICITIS

تظاهرات غير وصفية لالتهاب الزائدة الحاد

Ammar Shehadeh, MD; Mohammed Alaqqad, MD; Packirisamy Kannan, MD

د. عمار شحادة، د. محمد العقاد، د. كنان بكريسامي

ملخص البحث

يعتبر الألم البطني من الشكاوى الشائعة لدى الأطفال، وفي الواقع فإن كل طفل سوف يعاني من ألم بطني في وقت ما من حياته، ولكن في معظم الحالات يكون الألم خفيفاً، وظيفياً، غير جراحي، ولا يحتاج إلى استقصاءات دقيقة مثل حالات الإمساك، التهاب الأمعاء والأسباب الفيروسية الشائعة. بالرغم من ذلك فإن الحالات الخطيرة من الألم البطني يمكن أن تتظاهر بشكل مخائل ومشابه تماماً للألم البطني السليم. يعتبر التهاب الزائدة الحاد أشيع الأسباب الجراحية للألم البطني الحاد عند الأطفال ورغم ذلك فإنه لا ينتبه للتشخيص في 25% من الحالات نتيجة للتظاهر غير الوصفي للحالة. لدينا هنا تقرير عن حالتين من حالات التهاب الزائدة الحاد، الحالة الأولى تظاهرت على شكل التهاب معدة وأمعاء حاد دون أي علامات واضحة لالتهاب الزائدة الحاد والثانية هي حالة نادرة تظاهرت باحتباس بولي حاد.

ABSTRACT

Abdominal pain is a common complaint in children, virtually; every child will have abdominal pain at some point in his life. However, most cases are mild, nonsurgical, functional, and do not need deep investigations. For example; constipation, gastroenteritis and viral syndrome are one of common causes. Nevertheless, serious causes of abdominal pain can be misleading and present with almost same complaint as per the mild causes. Acute appendicitis is the most common surgical cause of abdominal pain in children. Yet; Diagnosis is missed in 25% of cases mainly due to atypical presentation. Here we report two cases of acute appendicitis. The first case presented with a picture of acute gastroenteritis without a clear signs of acute appendicitis. The other one was of a very rare presentation of acute appendicitis with acute urinary retention.

INTRODUCTION

Abdominal pain is a common complaint in children. Every child will have abdominal pain at some point in his life. However, most cases are mild, nonsurgical, functional, and does not need deep investigation. Mesenteric lymphadenitis, gastroenteritis and viral syndromescan mimic acute appendicitis.¹ Nevertheless, serious surgical or medical causes of abdominal pain can be misleading and present with almost the same complaint as per the mild causes.

Acute appendicitis is the most common surgical cause of abdominal pain in children.² It explains 1% of abdominal pain in children visiting ED.³ Nevertheless, Diagnosis of appendicitis is missed in 25% of cases,⁴ mainly due to atypical presentation.

Here we report two cases of acute appendicitis with

*Ammar Shehadeh, MD; Pediatric Department, Pediatrician, Hatta Hospital, Dubai, UAE. E-mail: ammarsh75@gmail.com.

*Mohammed Alaqqad, MD; Surgical Department, General Surgeon, Hatta Hospital, Dubai, UAE. E-mail: malaqqad@gmail.com.

*Packirisamy Kannan, MD; Head of General Surgery, Senior Consultant, Hatta Hospital, Dubai, UAE. E-mail: pkannan@dha.gov.ae.

atypical presentation. The first case was of a 7 years old girl with a long history of recurrent constipation and abdominal pain, presented with vomiting and diarrhea that turned out to be acute appendicitis. Because of the misleading history and examination, the patient reached the stage of perforation before appendicitis to be considered. Later the patient was operated and appendectomy was done.

The second case was of an eight years deaf mute child who presented with acute urinary retention, with persistent pain due UTI. However, ultrasound showed a large swollen appendix that was operated accordingly.

CASE PRESENTATION

The first case:

- First presentation: A 7 years old female presented with vomiting for 2 days associated with abdominal pain and diarrhea. The vomiting contained food particles non bilious or bloody stain. The pain was at the periumbilical region and there were loose motion about 5 to 6 times per day. There was low grade fever from the start of the acute symptoms, which was responding to antipyretics. The patient had recurrent history of abdominal pain and constipation. When the patient was examined at the emergency department, she was felt to be well with no sign of dehydration, no respiratory distress, normal vital signs and the abdomen was soft and lax. Her laboratory tests showed leukocytosis (white blood cells 12000) with neutrophilia (87%). Her urine analysis was normal and serum amylase was normal. The X-ray of the abdomen was not significant. Abdominal ultrasound was not available at that time. The patient was discharged on oral rehydration with antiemetic drug.

- Second presentation: One day later patient came back with persistent vomiting and abdominal pain. She didn't pass motion for the last 12 hours and looks sick. Clinically, she was mildly dehydrated, with normal abdominal contour and not distended. Generalized tenderness was elected. Her potassium was low (3.1 mmol/l), white blood cells (5900), neutrophils 71%, CRP 91 mg/dl. The patient was admitted in the pediatric section and started treatment as a gastroenteritis with hypokalemia. But after 8 hours of admission, the patient was persistently febrile, dehydrated and very ill. The abdomen became

distended with guarding all over. Her abdominal X-ray showed multiple air fluid levels with no gas in the lower intestine. Ultrasound was afforded and findings were with impression of dilated large intestinal bowel loops, enlarged mesenteric lymph nodes and free peritoneal fluid. So the ultrasound was suggestive of mesenteric adenitis and that's why, referred to the pediatric surgery hospital with diagnosis of peritonitis.

The patient was admitted there and repeated ultrasound showed signs of ileus due to perforated appendix. Later she was operated and kept for 8 days at the hospital. She was covered with antibiotic. Repeated ultrasound post operatively showed residual inflammatory changes of the jejunal loops and small amount of fluid in lower abdomen.

Histopathology report revealed acute suppurative appendicitis with periappendicitis. Finally the patient was discharged in a good health and on oral antibiotic for 5 days.

The second case:

Eight years child presented to the ER with a complaint of acute abdominal pain and mild fever for two days. He is known to have Jervell and Lange-Nielsen syndrome. He was deaf, mute; most of the history was taken from the mother.

At the first presentation, he was diagnosed as urinary tract infection and sent home with antibiotic and antipyretic medicines.

The second day he came to the outpatient clinic with persistent symptoms, not responding to the medical treatment. For two days, he was complaining of mild fever and abdominal pain that increased in intensity in the last few hours before presentation. The pain associated with poor appetite. There was no vomiting and he passed motion recently.

It was very difficult to make a conclusion about urinary symptoms, last urine passed, or any change in urine color, as the child was going to toilet independently He cannot communicate verbally and most of the history was taken from the mother.

There were no previous surgeries and no known drug allergies. He was on propranolol for the prolonged QT, which is a part of his Jervell and Lange-Nielsen syndrome.

On examination, he was not pale, afebrile and with normal vital signs, but we observed he was straining and the mother said, he just passed urine. His abdomen was distended below the umbilicus and tender with large palpable bladder. The rest of systemic examination was unremarkable.

Total blood count showed mild leukocytosis. Urinary catheter was inserted for the acute urinary retention and a urine sample was showing a marked pyuria. Abdominal ultrasound was requested. During observation the patient was still in pain even after fixing the urinary catheter. His abdomen was very tender at lower right quadrant. The abdominal ultrasound was done and showed swollen inflamed appendix. Patient was shifted to pediatric surgery and operated.

Therefore, the case was reported to be an acute appendicitis presented with acute urinary retention. A fairly difficult case to diagnose as the history was not clear. No history from the patient could be taken and the presentation was atypical. Presentation was more of an acute urinary tract infection with retention, than of acute appendicitis.

DISCUSSION

Acute abdominal pain is a common complaint in children. It represents 8.1% of pediatric emergency department or outpatient clinic visits.⁴ Although, most of the cases are functional, physiologic and non-organic, emergency surgical or medical causes should be ruled out in every single case of abdominal pain. The most difficult challenge is to make a timely diagnosis so that treatment can be initiated and morbidity prevented.⁵

Acute appendicitis is the most common surgical cause of abdominal pain in children;² it explains 1% of abdominal pain in children visiting ED.⁴ Nevertheless, diagnosis of appendicitis is missed in 25% of cases.³

In children good history could be difficult. Children

may not be able to describe the pain well, cannot verbalise, or cannot accurately recall symptoms, therefore, in many cases we depend on parents in taking the history, or at least take a shared history from parents and children. Taking history from the parents may not give a clear idea about the real complaint.

The mission will be difficult when you are facing poor history, lack of resources and vague recurrent condition which mimic the diagnosis of appendicitis. Many doctors recorded their experience with missed appendicitis and explained why it was not clear.⁶

A very recent study shows that the classical presentation of acute appendicitis with a history of pain migration to the right lower quadrant, and tenderness and rigidity in the right lower quadrant was present in only 6% of patients with suspected appendicitis,⁷ while, a combination of the clinical features migration of pain to the right lower quadrant and direct tenderness in the right lower quadrant, was present in only 28% of clinically suspected patients.⁷ The discriminative power of individual and combined clinical features and laboratory test results for appendicitis is weak in patients with suspected appendicitis.^{7,8}

Appendicitis is not an abdominal pain only, it is signs and symptoms. A lot of doctors spent their lives to make the diagnosis easy for us. For example, Alvarado scores for the diagnosis of acute appendicitis in children, which is shown in Table 1.⁹

Appendicitis is a serious surgical emergency, and clinical evaluation can miss or falsely diagnose a substantial percentage of cases, as in Kerstin and Schick studies diagnosis of appendicitis is missed in 25% of cases, while 25% of case undergone operation without having the correct diagnosis.³ Hence, the need for added imaging evidence in diagnosing appendicitis. The evidence shows that the routine use of imaging has a positive effect and outcomes in patients with suspected appendicitis.^{9,10}

American College of Radiology has published a consensus document on appropriateness criteria for imaging evaluation of patients with acute pain in the

Symptoms	Score
Migration of the pain	1
Anorxia	1
Nausea- vomiting	1
Signs	
Tenderness in RIF	2
Rebound tenderness in RIF	1
Elevated temperature	1
Leuckocytosis	1
Shift to the left of Neutrophils	1
Total	10
5-6	Possible
7-8	Propable
>9	Highly propable

Table 1. Alvarado score.

right lower quadrant. The consensus finds CT the most appropriate for these patients.¹¹ Recently the results of a multicenter diagnostic accuracy study in over 1000 patients with acute abdominal pain, showing that initial ultrasonography in all patients and additional CT in case of negative or inconclusive ultrasonography was the most sensitive imaging strategy to detect urgent disease, while minimizing exposure to radiation.¹²

High resolution ultrasound is approved with good results, easy done and can be repeated for serial follow up. It has a specificity of 95%, a sensitivity of 80%, and an accuracy of 90%.¹³

Mesenteric lymph adenitis, Meckel's diverticulitis, gastroenteritis, kidney disease, PID and a lot of other diseases can mimic the clinical presentation of acute appendicitis. Moreover, it is not possible accurately to distinguish acute mesenteric lymphadenitis from acute appendicitis in children using clinical evaluation alone, ultrasound should be performed in equivocal cases.¹⁴

Return back to our patient who had recurrent constipation and her assessment was not helpful on arrival. Clinical alverado score was the key to closely follow up. She had anorexia, vomiting, fever, leucocytosis, and leucocyte left shift. So it was at least 5. The missing points are the rebound or migratory pain and right lower quadrant pain.

The radiologist was not available at that time. And even later when the ultrasound was done and showed the enlarged lymph nodes and the appendix could not be visualized.

This will support our suggestion to always depend on the clinical evaluation, and consider Alvarado score for a help, as imaging may not be available, inconclusive or even misleading.

Regarding our second case, it is a rare, misleading presentation of appendicitis, and it was really difficult to diagnose especially that the child was deaf mute with no reliable history. Similar to this case, a very few cases were reported.

Noble and colleagues reported a similar case in 1990 and reviewed seven paediatric cases reported between 1932 and 1985. Most were male and an appendicular abscess was the cause of the urinary retention. Noble et al highlighted the problems of delayed diagnosis and the need for repeat clinical abdominal examination after bladder decompression to elicit any subtle signs which might be present.¹⁵

J M Preece in 2001, has described a case of a 3.5 years old boy, admitted with history of abdominal pain associated with diarrhoea but no urinary symptoms. He developed dysuria and went into acute urinary retention confirmed by an ultrasound scan that also showed moderate hydronephrosis without signs of appendicitis; the child was transferred to the paediatric urologist at a tertiary centre. Cystoscopy suggested a pelvic tumour arising on the right, extending to the midline with extensive involvement of the rectum. A suprapubic catheter was inserted to decompress the bladder. A computed tomography (CT) scan confirmed an enhancing pelvic mass related to the bowel which turned to be acute appendicitis.¹⁶

Urinary retention is uncommon in children, especially the young, and the diagnosis of appendicitis must always be considered in such cases.

Perforated appendicitis occurs in 10-20% of cases.³ A substantial risk of perforation within 24 hours of

onset was noted (7.7%), and was found to increase with duration of symptoms, especially if the delay was more than 2 days,¹⁷ while perforation was directly related to the duration of symptoms before surgery. The risk was associated more with prehospital delay than with in-hospital delay.¹⁸ Therefore, delay in diagnosing or operating acute appendicitis can have disastrous consequences.

CONCLUSIONS

When the patient's history or clinical findings are equivocal, always follow up the patient with repeated examinations, evaluation, and imaging. As clinical evaluation alone is not reliable enough to rule in or out appendicitis, imaging alone without regarding the clinical background cannot be conclusive. When the patient present with unusual complaint that cannot be explained by a common cause think of uncommon causes like appendicitis.

Acute abdominal pain in children should not be taken lightly and the patient should be closely observed if diagnosis is not clear yet after history, examination and imaging. Missing acute appendicitis is disastrous, so when discharging the patient, we should consider the possibility of having the early signs of appendicitis. The parents should be given a detailed anticipatory guidance, and an easy access to medical care was any doubt or change in the condition.

REFERENCES

1. Reynolds SL, Jaffe DM. Diagnosing abdominal pain in a pediatric emergency department. *Pediatr Emerg Care* 1992;8:126.
2. Banieghbal B, Lakhoo K. Appendicitis. In: Emmanuel A. Ameh et al, editors. *Paediatr Surg Global Help* 2011;440.
3. Schick KS, Hoffmann JN. Appendicitis. In: Wichmann M, Caron DC, Maddern NR, editors. *Rural surgery springer* 2011: p. 217-21.
4. Paris CA, Klein EJ. Abdominal pain in children and the diagnosis of appendicitis. *West J Med* 2002 Mar;176(2):104-7.
5. Leung AKC, Sigalet DL. Acute abdominal pain in children. *Am Fam Physician* 2003 Jun;67(11):2321-7.
6. Akhvizadegan H. Missed appendicitis: Mimicking urologic symptoms. *Case Rep Urol* 2012;2012:571037.
7. Lameris W, Van RA, Go PM, et al. Single and combined diagnostic value of clinical features and laboratory tests in acute appendicitis. *Acad Emerg Med* 2009 Sep;16(9):835-42.
8. Andersson RE. Meta-analysis of the clinical and laboratory diagnosis of appendicitis. *Br J Surg* 2004;91:28-37.
9. Alvarado A. A practical score for the early diagnosis of acute appendicitis. *Ann Emerg Med* 1986;15:557-64.
10. Ng CS, Watson CJE, Palmer CR, et al. Evaluation of early abdominopelvic computed unknown cause: prospective randomised study. *BMJ* 2002;325:4-7.
11. Rosen MP, Ding A, Blake MA, et al. American College of Radiology Appropriateness Criteria. Right lower quadrant pain suspected. Appendicitis 2010; reassessed October 5, 2011.
12. Lamris W, van Randen A, van Es HW, et al. Imaging strategies for detection of urgent conditions in patients with acute abdominal pain: diagnostic accuracy study. *BMJ* 2009 Jun 26;338:b2431.
13. Abu-Yousef MM, Bleicher JJ, Maher JW, et al. High-resolution sonography of acute appendicitis. *Am J Roentgenol* 1987 Jul;149(1):53-8.
14. Toorenvliet B, Vellekoop A, Bakker R, et al. Clinical differentiation between acute appendicitis and acute mesenteric lymphadenitis in children. *Eur J Pediatr Surg* 2011 Mar;21(2):120-3.
15. Noble J, Culkin DJ, Willis S, et al. Acute urinary retention in a child with appendiceal abscess: diagnostic dilemma. *Urology* 1990;36:513-5.
16. Preece JM, Beverley DW. Acute urinary retention: an unusual presentation of acute appendicitis in a 3 year old boy. *Arch Dis Child* 2001;84:269.
17. Lee J, Tashjian DB, Moriarty KP. Missed opportunities in the treatment of pediatric appendicitis. *Pediatr Surg Int* 2012 Jul;28(7):697-701.
18. Narsule CK, Kahle EJ, Kim DS, et al. Effect of delay in presentation on rate of perforation in children with appendicitis. *Am J Emerg Med* 2011 Oct;29(8):890-3.