

Medical Quiz Answers

- A1. Ultrasound (figure 1) and CT scan (figure 2).
- A2. Dilated and thickened bowel loops in right iliac fossa seen in figure 1. The appendix is dilated containing phlebolith and surrounding bowel loops are prominent in CT scan.
- A3. The diagnosis is acute appendicitis. The management is appendectomy.

DISCUSSION

Acute appendicitis in pediatrics remains a diagnostic dilemma, despite the wide availability of diagnostic radiological investigations. Acute appendicitis in pediatrics is one of the common causes of pediatric surgical emergency admissions¹⁻³.

The clinical presentation of acute appendicitis in children varies from abdominal pain to late complications, such as perforation leading to generalized peritonitis and sepsis. The varied clinical presentation is well explained by pathophysiological variation and anatomical differences causing acute appendicitis^{4,5}.

Abdominal pain in children is the most common presenting symptom followed by fever, vomiting and loss of appetite. Generalized and localized right lower quadrant tenderness is found in 60% of acute appendicitis in preschool children^{4,5}.

The clinical presentation of acute appendicitis in pediatrics is non-specific leading to delayed diagnosis. Overlap of the symptoms, poor/limited communication skills, inadequate physical examination and irritability lead to misdiagnosis^{4,5}.

The diagnosis of acute appendicitis is difficult in younger children. It needs a high index of suspicion and necessitates radiological and laboratory tests to be certain of the diagnosis⁶.

Complete blood count (CBC) is the most common blood test used for suspected acute appendicitis; however, it is not sensitive and non-specific⁶.

C-reactive protein (CRP) is more sensitive than CBC in diagnosing appendicular abscess and appendicular perforation^{6,7}.

Abdominal X-ray is usually performed in cases of acute abdominal pain in children. The most specific finding in children is fecolith, which only accounts for 33% of the cases. Other non-specific plain radiographical findings suggestive of acute appendicitis in children are localized ileus, bowel obstruction, free peritoneal fluid and pneumoperitoneum. Ultrasound is very helpful in the diagnosis of equivocal cases of acute appendicitis in children^{7,8}.

The suggestive findings of ultrasound in acute appendicitis are appendix diameter more than 6 mm, an appendicolith, pericecal fluid and thickened bowel loops. CT scan is a useful radiological tool when ultrasound fails to identify the appendix in cases of suspected acute appendicitis in children. Common findings of acute appendicitis on CT scan are an appendicolith, abscesses, appendix diameter more than 6 mm, thickening of bowel loops and fat streaking^{7,8}.

The management of acute appendicitis in children is urgent appendectomy. Children with atypical clinical presentation need close observation and require radiological investigations, such as ultrasound or CT scan⁸.

CONCLUSION

Acute appendicitis in children is rare. Delay in the diagnosis may be due to the overlap of symptoms, poor communication skills, atypical presentation and irritability during physical examination. Diagnosis of acute appendicitis in children requires detailed history, high index of suspicion, repeated physical examination and imaging tools. Early surgical intervention reduces mortality and morbidity associated with complicated appendicitis in children.

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Competing Interest: None.

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REFERENCES

1. Holcomb G, St Peter S. Current Management of Complicated Appendicitis in Children. *European Journal of Pediatric Surgery* 2012; 22(03):207–212.
2. Bonadio W, Rebillot K, Ukwuoma O, et al. Management of Pediatric Perforated Appendicitis: Comparing Outcomes Using Early Appendectomy versus Solely Medical Management. *Pediatr Infect Dis J* 2017; 36(10):937–941.
3. Willis ZI, Duggan EM, Bucher BT, et al. Effect of a Clinical Practice Guideline for Pediatric Complicated Appendicitis. *JAMA Surg* 2016; 151(5):e160194.
4. Sarda S, Short HL, Hockenberry JM, et al. Regional Variation in Rates of Pediatric Perforated Appendicitis. *J Pediatric Surg* 2017; 52(9):1488–1491.
5. Pham X-BD, Sullins VF, Kim DY, et al. Factors Predictive of Complicated Appendicitis in Children. *J Surg Res* 2016; 206(1):62–66.
6. Svensson JF, Patkova B, Almström M, et al. Nonoperative Treatment with Antibiotics versus Surgery for Acute Nonperforated Appendicitis in Children: A Pilot Randomized Controlled Trial. *Ann Surg* 2015; 261(1):67–71.
7. Russell WS, Schuh AM, Hill JG, et al. Clinical Practice Guidelines for Pediatric Appendicitis Evaluation Can Decrease Computed Tomography Utilization while Maintaining Diagnostic Accuracy. *Pediatr Emerg Care* 2013; 29(5):568–573.
8. Minneci PC, Sulkowski JP, Nacion KM, et al. Feasibility of a Nonoperative Management Strategy for Uncomplicated Acute Appendicitis in Children. *J Am Coll Surg* 2014; 219(2):272–279.