

Case Report

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Appendicular perforation in a neonate: a case report

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ABSTRACT

Appendicitis and the consequent appendicular perforation are mostly rare in neonates. It is more common in premature babies though. Presentation therefore may mimic necrotizing enterocolitis although this is usually not so severe. We report a case of appendicular perforation in a term neonate who presented as peritonitis. Diagnosis was made after the exploration. Patient did well after surgery. Although rare, appendicular pathology should be entertained in any case of peritonitis even though the presentation is not the same as in older children due to various anatomical reasons. Primary treatment is surgery.

Keywords: Appendicular perforation, Neonate, Peritonitis

INTRODUCTION

Appendicitis remains the most common cause of acute abdomen in children. However the condition is very rare in neonates with a high complication rate.¹ Rarity of the condition remains one of the reasons for late diagnosis. Appendicular perforation in particular is a life threatening condition in neonates and may be responsible for high morbidity and mortality.^{1,2} A thin appendicular wall with indistensible caecum in neonates predisposes to appendicular perforation.³ Nevertheless perforation could be the end result of another disease process as well like Hirschsprung's disease, necrotising enterocolitis, cystic fibrosis etc. Interestingly however, overall incidence of neonatal appendicitis remains low (0.04-0.2%) and it is little more in premature males although the reason for this is not known.⁴ A high index of suspicion is necessary therefore to make a preoperative diagnosis inasmuch as the presentation is not classical. Treatment is surgical. Prognosis depends on the gestational age, timing of diagnosis, presence of complications, and other comorbid factors.

CASE REPORT

A ten-day old full-term male baby delivered via LSCS presented with difficulty in breathing since five days and abdominal distension since one day. Baby had passed meconium within 24 hours of birth. There were no significant perinatal events.

On examination, baby had a toxic look, had tachypnoea and tachycardia and was dehydrated. Abdomen was distended, tense and tender, and shiny. Dilated veins showed over the abdomen.

Hemogram showed neutrophilic leucocytosis. Electrolytes were within normal limits. Abdominal X-ray showed dilated bowel loops (Figure 1). USG abdomen largely corroborated the X-ray findings. There was no mass or local fluid collection.

With a working diagnosis of peritonitis, patient underwent exploratory laparotomy. It showed biliofeculent free fluid in the abdominal cavity. There were grade I adhesions present among the bowel loops which

were slightly edematous. There was a big perforation present at the base of the appendix. Adjacent ileum and caecum showed multiple tiny necrotic patches. Appendectomy was done. In view of the necrotic changes at the ileo-cecal junction, latter was exteriorized. Gentle peritoneal lavage was done and abdomen was closed over a glove drain. Patient made good recovery.

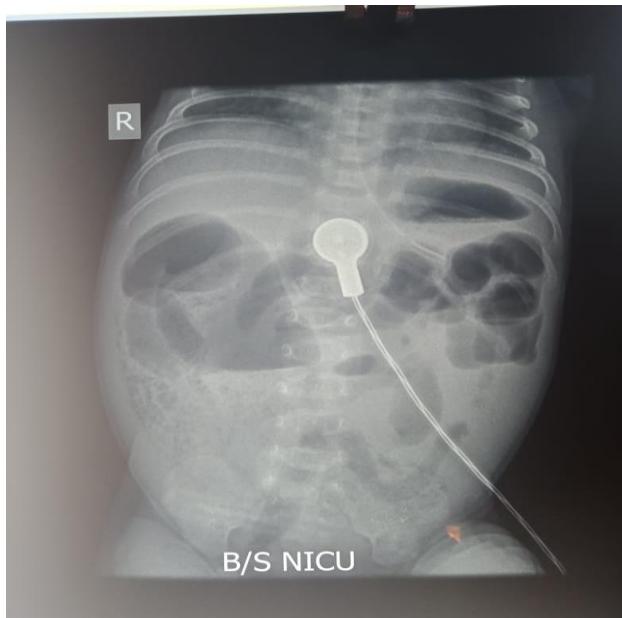


Figure 1: Erect X-ray abdomen showing dilated bowel loops and abdominal wall edema signifying generalized peritonitis.

Histopathology of the excised appendix showed acute inflammatory changes with no specific pathology.

Four weeks later, stoma was closed after confirming the distal patency by a contrast study using water-soluble dye. Baby did well and is asymptomatic six months after the procedure.

DISCUSSION

In 1886 Fitz coined the term appendicitis. Moron is credited with performing the first deliberate appendectomy for a perforated appendix in the United States in 1887. In 1889 Mc Burney reported his treatment of appendicitis with appendectomy before rupture and described "the seat of greatest pain exactly between an inch-and-a-half and two inches from anterior spinous process of the ileum on a straight line drawn from the umbilicus". From then this location was known as the Mc Burney's point.

Appendicitis is the most common cause of acute abdomen in children but is rare in neonates. High chances of complications like perforation and gangrene result in significant morbidity and mortality.¹ Appendicular perforation is a life threatening condition in neonates.² Perforation in these small neonates could be due to

inflammation of appendix or could be the end result of another disease process like Hirschsprung's disease, necrotising enterocolitis, and cystic fibrosis. A thin appendicular wall with indistensible cecum in neonates predisposes to appendicular perforation.³ Incidence reported is approximately 40 per 100,000 live births (0.04 to 0.2%) and is more in premature male.⁴ Low Incidence of neonatal appendicitis is attributed to funnel-shaped appendix with wide opening of cecum, liquid diet and lack of fecolith.⁵

Clinical diagnosis of neonatal appendicular perforation is challenging due to its non-specific presentation, as well as limited clinical history and physical examination in neonates. Notably no clinical and radiological criteria are presently available to distinguish appendicular perforation from necrotising enterocolitis before surgical exploration.

Supine, upright and lateral abdominal radiographs usually fail to detect intra-peritoneal free gas.⁶ Graded compression ultrasonography is highly specific for detecting appendicitis in children; however its sensitivity varies greatly and is operator-dependant.⁷ CT scan of abdomen should not be done routinely in neonates due to risk of unnecessary exposure.⁸

Neonatal appendicitis has a higher risk of perforation (85%) due to delayed diagnosis. Generally, perforation of appendicitis does not result in infra-diaphragmatic free air because of the covering omentum. The mortality rate of neonatal appendicitis has decreased to 18% from 28% due to the awareness of the disease and earlier diagnosis.⁹ However, the mortality rate may exceed 50% in the case of delayed diagnosis and in the presence of possible complications such as diffuse peritonitis.¹⁰

The treatment of appendicular perforation primarily is surgery.

CONCLUSION

Appendicular perforation, even though a very rare entity in neonates, should be considered in the differential diagnosis of peritonitis. Timely treated, the prognosis remains good in the absence of any specific pathology.

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