H39 Acute Neonatal Appendicitis — An Autopsy Diagnosis

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The goal of this presentation is to present a case of ruptured acute appendicitis in a 19-day-old neonate.

This presentation will impact the forensic science community by illustrating how acute neonatal appendicitis remains a diagnostic challenge. The majority of cases are discovered only during postmortem examination. A high index of clinical suspicion and meticulous analysis of clinical features can lead to an early diagnosis and a more timely surgical intervention to reduce its associated high mortality rate.

Acute neonatal appendicitis is a very rare condition with high mortality. It remains a diagnostic challenge despite the availability of advanced diagnostic imaging. Reported here is a 19-day-old male baby who presented with a clinical picture of a possible small bowel obstruction, and was found at autopsy to have a perforated appendicitis.

Case Report: This case involves a 19-day-old male infant born at full term via spontaneous vaginal delivery following an unremarkable pregnancy. He received a Hepatitis-B vaccine shortly after the delivery and stayed in the newborn nursery for two days prior to discharge. He was diagnosed with thrush at ten days old and was managed with nystatin.

He presented at an emergency department with one-day complaints of increased fussiness and difficulty feeding and was noted to have a slightly distended and tender abdomen. A septic workup was performed and included a Complete Blood count (CBC) (revealed leukocytosis of 28.5k/UL), a negative blood culture, a lumbar puncture (clear fluid with a negative Gram stain), urinalysis (25mg/dL protein with negative nitrite and leukocyte esterase), and elevated C-Reactive Protein (CRP) (194.6mg/L). The patient was subsequently started on antibiotics for neonatal fever. During his three days of hospitalization, the clinical team requested a transfer to the pediatric Intensive Care Unit (ICU) due to worsening of abdominal distension, increasing white count to 43.81k/UL, and suspicions of small bowel obstruction.

The patient further deteriorated during transfer and was significantly obtunded on arrival to the pediatric ICU. He was grossly edematous, with abdominal distension, anisocoria, bruising along the right flank, absence of reflexes, and minimal spontaneous movement. Radiographic studies performed included a Kidneys, Ureter, and Bladder (KUB) (showed absence of air in the rectum, edema of the bowel walls, but no free air on cross-table film), an abdominal X-ray (showed a mild-to-moderate degree of gaseous distention of the bowel), and a chest X-ray (showed bilateral pulmonary opacities). The patient was acutely managed for hypoxia associated with severe metabolic acidosis, hypokalemia, hypotension, and hypoglycemia. He subsequently had several episodes of recurrent wide complex tachycardia and pulseless electrical activity. After multiple resuscitations, he was pronounced dead several hours after the transfer.

An autopsy was performed and the most significant findings were gangrenous appendicitis with evidence of rupture and marked acute serositis identified in the rectal serosa and focally in the mesenteric peritoneum. There was dilation of the transverse colon and proximal descending colon but no obstruction of the bowel was identified.

Discussion: Acute neonatal appendicitis is a very rare clinical entity with 0.04%-0.2% reported incidence.[1] It is more common in males, with up to a half of all reported cases involving premature infants.[2] The different factors attributing to the low incidence include funnel-shaped appendix with a wide opening into the cecum, soft liquid diet, lack of fecalith, recumbent posture, and the presumed infrequent occurrence of viral-induced lymphatic hyperplasia in the periappendiceal region.[3]

The rarity of this disease coupled with the associated diagnostic challenge largely contributes to the reported high mortality rate of up to 28%.[2] Abdominal distension, a non-specific clinical feature, is the most common clinical feature present in up to 89% of the patients and was one of the presenting features of this patient. Other clinical features are non-specific and include vomiting, refusal to feed, irritability, temperature instability, and leukocytosis.[4] Radiological findings also include non-specific findings such as abnormal gas pattern, free peritoneal fluid, obliteration of psoas shadow, right iliac fossa abscess, and a thickened abdominal wall.[5] Other useful diagnostic tools include abdominal ultrasonography and spiral computed tomography.

Perforation plays a significant role in determining the prognosis. Due to the delayed diagnosis and management, the incidence of perforation and subsequent peritonitis is high in neonatal appendicitis. Other factors contributing to the increased susceptibility to perforation in this population include the thin appendiceal wall, a non-distensible cecum, a relatively small omentum insufficient to wall off infection, and a small capacity of the abdominal cavity, resulting in easy dissemination of infection.[6]

In conclusion, similar to this case, acute appendicitis remains a diagnostic challenge and, in the majority of cases, is discovered only on postmortem examination. A high index of clinical suspicion and meticulous analysis of clinical features can lead to early diagnosis and more timely surgical intervention to reduce the associated high mortality rate.

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Neonatal Appendicitis, Rare Clinical Entity, High Mortality