

Infant Botulism Initially Presenting as a Bowel Obstruction

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Abstract

Infant botulism is a rare but serious neuromuscular condition affecting infants 2 weeks to 1 year of age. Infant botulism is caused by *C. botulinum* which colonizes the GI tract and releases a toxin that binds nerve terminals leading to progressive weakness, hypoventilation, and respiratory failure. Initial symptoms in an infant can be constipation and poor feeding. Our case reports a 10-week-old female presenting with several days constipation and three days of feeding intolerance, and inconsolability initially diagnosed as a bowel obstruction on imaging. Exploratory laparotomy showed no signs of obstruction and infant later developed neurological symptoms which led to suspicion and diagnosis of infant botulism. In our literature review there is no other case of infant botulism presenting initially as bowel obstruction. A differential diagnosis of infant botulism should be considered in infants presenting with signs of bowel obstruction.

Keywords: Botulism; Bowel obstruction; Acute abdomen

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Introduction

Infant botulism is a rare neuromuscular condition caused by the *C. botulinum* toxin which without quick recognition and treatment can lead to critical illness or death. *C. botulinum* colonizes the intestinal tract through ingestion or inhalation and produces a neurotoxin that binds to nerve terminals to prevent release of acetylcholine [1]. The *C. botulinum* toxin can be introduced through ingestion of food products canned or preserved at home using improper sterilization and inhalation of dust particles from construction sites. Infant botulism usually presents between 2 weeks to 1 year of age with a median age of 10 weeks. This is only seen in children less than 12 months as the GI tract at this age has lower gastric acidity and bacterial gut flora making it a more hospitable environment for the *C. botulinum*. Infant botulism consists of 70% of botulism cases in the United States with 77 cases annually [2]. The initial presentation is usually several days of constipation followed by progression to bulbar weakness and hypotonia which then leads to hypoventilation and respiratory failure. Diagnosis of botulism is through testing the stool, food, or serum for toxin. Treatment consists of supportive care and botulinum immune globulin (BabyBIG). We present a unique presentation of infant botulism initially suspected to be a small bowel obstruction in a 10-week-old infant.

Case Report

A 10-week-old female infant born FT with no complications is brought to the ER by parents with complaint of poor feeding. Mother reports for past 2 days infant has been feeding much less than normal and being unable to tolerate feeding day of arrival. Mother also reports decreased wet diapers, inconsolability, and no bowel movement for several days. Of note patient had their 2-month vaccines 3 days prior to arrival. General appearance shows a lethargic and inconsolable infant with moaning cry. Vital signs show infant is afebrile but tachycardic with normal respiratory rate. On exam infant noted to have a distended abdomen with diminished bowel sounds and four-five second capillary refill. There is not hypotonia, abnormal hear sounds, respiratory distress. Due to ill appearance and concern for intestinal obstruction, fingerstick glucose, CBC, CMP, VBG, blood and urine cultures were obtained. Abdominal X-ray and ultrasound were obtained to rule out volvulus or intussusception. Glucose on fingerstick was 53. Abdominal X-ray results appeared consistent with small bowel obstruction (**Figure 1**).

Infant was given D10 bolus, 60 ml/kg fluid bolus, started on broad spectrum antibiotics and D5 maintenance. Infant was transferred to tertiary care Children's Hospital for further management.

When following up of patient course at Children's Hospital, it was reported that infant underwent exploratory laparotomy which



Figure 1 Abdominal X-ray of infant showing large, distended bowel loops suspicious of bowel obstruction.

showed no evidence of intussusception of obstruction. Due to illness infant was kept ventilated and transferred to the PICU. In the PICU it was noted that infant became hypotonic at which point botulism was suspected. Infant was started on Botulism immunoglobulin (BabyBIG) and symptoms had improved.

Discussion

From our literature review, there is no other case report of an infant with botulism presenting as a small bowel obstruction. There are few case reports of adult patients with botulism who presented with acute abdominal pathology. One report exists of a 24-year-old man with foodborne botulism who initially presented with abdominal distension, lethargy, and fever without significant neurological symptoms. His X-ray was shown to have multiple

air fluid levels on abdominal x-ray [3]. Another case series on botulism in adults in Italy showed three adult patients with botulism who presented with acute abdominal pathology. The two that underwent surgery had worse neurological outcomes compared to the third patient who had some neurological symptoms and was managed conservatively [4]. In our patient exploratory laparotomy was performed and the infant required mechanical ventilation in the ICU.

The differentials considered in this infant was small bowel obstruction due to volvulus and intussusception. In older infants and children midgut volvulus can present with variable and less acute symptoms including irritability, pain, constipation, and failure to thrive [5]. The differential of intussusception was considered due to lethargic appearance, distended abdomen, and history of infant received a rotavirus vaccine 3 days prior. There is a reported increased risk of intussusception of 1-7 days after rotavirus vaccine with risk being higher if 1st dose is given after 12 weeks of age [6]. The Ultrasound of the infant only showed large bowel loops w/o evidence of intussusception.

One of the earliest signs of botulism in infants is constipation. In our patient's case, the child had not made a bowel movement for several days. Paralytic ileus is caused by motor paralysis of intestinal tract due to failure of Auerbach's and Meissner's plexus which lead to distension of the bowels, vomiting, decreased bowel sounds, and absolute constipation [7]. Our literature review did not find a direct correlation between paralytic ileus and infant botulism, however the pathogenesis of *C. botulinum* and its colonization in the intestinal tract suggests that the botulism toxin causes paralytic ileus. Dilated bowel loops on abdominal x-ray can be seen in a paralytic ileus as well as a bowel obstruction. Absence of a bowel obstruction on exploratory laparotomy in our patient suggests the dilated bowel loops were caused by paralytic ileus.

Conclusion

Infant botulism is a rare but serious neurological condition that can cause critical illness. Here we presented unique case of an infant with botulism presenting with signs of an acute abdomen initially thought to be a bowel obstruction. In infants with signs of acute abdomen with or without neurological symptoms and history of constipation, infant botulism should be considered as part of the differential.

References

- 1 Cagan E, Peker E, Dogan M, Caksen H (2010) Infant botulism. The Eurasian J Med 42: 92.
- 2 Van Horn NL, Street M (2018) Infantile botulism.
- 3 Fenicia L, Anniballi F, Aureli P (2007) Intestinal toxemia botulism in Italy, 1984–2005. Europ J Clin Microbiol Infect Disea 26: 385-394.
- 4 Friziero A, Sperti C, Da Dalt G, Baldan N, Zanchettin G, et al. (2021). Foodborne botulism presenting as small bowel obstruction: a case report. BMC Infect Disea 21: 1-4.
- 5 Shalaby MS, Kuti K, Walker G (2013) Intestinal malrotation and volvulus in infants and children. BMJ p: 347.
- 6 Koch J, Harder T, von Kries R, Wichmann O (2017) Risk of Intussusception After Rotavirus Vaccination: A Systematic Literature Review and Meta-Analysis. Deutsches Ärzteblatt Internat 114: 255.
- 7 Weledji EP (2020) Perspectives on paralytic ileus. Acute Med Surg 7: e573.