

## CASE REPORT

# A case of infant botulism in a 4-month-old baby

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**Learning point for clinicians**

This case report highlights: (i) the difficulty of infant botulism (IB) diagnosis as it is a rare disease, (ii) the efficacy and safety of trivalent equine antitoxin in IB treatment, (iii) honey is not the only cause of IB and (iv) the need for physician training to recognize and diagnose IB.

**Case presentation**

A 4-month-old baby (7 kg) was admitted to the Pediatric Department for constipation, feeding difficulties, weak cry, lethargy and weak muscular body control. Symptoms of infant botulism (IB) appeared 1 month before the admission, after hexavalent vaccine administration, with a slow and progressive evolution. The baby has become lethargic, with blunted facial expression and weak cry. Seven days before admission he started refusing breast milk. Clinical history revealed no perinatal or delivery complications and the baby was normal for development and growth (50th percentile). On admission the baby was fully conscious and the initial exam confirmed generalized but moderate hypotonia, bilateral ptosis and strabismus. The tendon reflexes remained symmetric. Pediatricians suspected a cerebral infectious disease; therefore, dexamethasone ceftriaxone, acyclovir and dextrose were administered. The laboratory and radiological exams showed no abnormalities as

well as cerebrospinal analysis; viral and metabolic tests were normal. Clinical course improved quickly and the baby was discharged after 1 week. Since constipation and bilateral ptosis were not completely resolved, a follow-up visit was planned in 10 days. At the time of follow-up symptoms were still observed. Therefore, the baby was re-hospitalized for further examination. On the second day, the clinical condition worsened in that oxygen desaturation, generalized and severe hypotonia and non-reactive bilateral mydriasis appeared. The baby refused breastfeeding and enteral nutrition was started. Electromyography confirmed presynaptic block. Given the clinical scenario, IB was suspected.

Clinical samples were submitted for laboratory confirmation at the National Reference Centre for Botulism and *Clostridium botulinum* type A was detected in rectal swabs and enema via real-time Polymerase Chain Reaction (PCR). No botulinum neurotoxins (BoNTs) were detected in enema. Spores excretion became negative 4 days after the laboratory confirmation. History revealed that the child had ingested honey 5 days prior to the onset of symptoms. However, analysis of leftover honey resulted negative for *C. botulinum* spores. The patient was transferred to the Pediatric Intensive Care Unit. Upon indication of Rome and Pavia Poison Control Centres, trivalent equine antitoxin (Botulism Antitoxin Behring: 750 IU-anti-A, 500 IU-anti-B, 50 IU-anti-E/ml; 10 ml/kg/iv) was administered. Clinical conditions improved 48 h later and the baby was moved to the Pediatric Department after 10 days. Enteral nutrition was required for 3 weeks. The baby was discharged without sequelae after 1 month.

## Discussion

IB is a life-threatening disease that results from absorption of BoNTs produced *in situ* by clostridia that colonize the intestinal lumen of infants below 1 year of age.<sup>1</sup> Colonization occurs because normal bowel flora that could compete with clostridia have not been fully established.<sup>2</sup> BoNTs cause muscle flaccid paralysis through presynaptic blockade of acetylcholine release.<sup>1</sup> The clinical onset is insidious and characterized by constipation, weak cry, difficulty in breastfeeding, poor muscle tone and finally paralysis of the respiratory muscles. The diagnosis is frequently delayed. The identified risk's factors for IB are honey, and spores coming from telluric environments or herbal infusion (i.e. dust, chamomile).<sup>2</sup> IB is a rare but generally reversible disease, and antidotal therapy is required in selected cases.<sup>3</sup> Different antitoxin formulations are available for botulism.<sup>3,4</sup> The treatment with trivalent equine antitoxin showed no acute or delayed adverse reactions and represents an effective method for rapidly reversing IB.<sup>3,5</sup> In USA, Baby-BIG, human-derived botulism antitoxin, is the antitoxin of choice for IB's treatment, but the high cost limits its use in many countries.<sup>6</sup> In other countries, equine antitoxin is currently used and considered safe and effective.<sup>3,5</sup>

Despite honey ingestion is among the most common cause of IB, this was not the cause. We hypothesize that the probable source of *C. botulinum* spores was the dust settled on the clothes of baby's father who worked as a bricklayer and was used to cradle the baby in his arms coming back home.

In conclusion, this case report suggests that diagnosis of IB must be considered even when no history of honey intake is reported, and also highlights the need for physician to receive adequate training to recognize and diagnose IB.

*Conflict of interest:* None declared.

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