Movement Disorder Associated With Foreign Body Ingestion

Olugbenga Akingbola, MD, Dinesh Singh, MD, Uwe Blecker, MD

abstract

We present a case of recurrent bouts of irritability with arching, head extension, and lethargy in a previously healthy 10-month-old girl admitted to the PICU for acute onset of a movement disorder. The patient's vital signs and physical examination were unremarkable but recurrent bouts of abnormal movements persisted for the first 10 hours of admission in the PICU. Possible diagnoses, such as meningitis, status epilepticus, space occupying lesions, and toxic ingestions, were ruled out because of negative cerebrospinal fluid analysis, normal EEG, and negative results of other ancillary tests. On the second day of admission, an abdominal radiograph was obtained because intussusception was considered a probable diagnosis due to recurrent episodes of arching and lethargy. The abdominal radiograph revealed the presence of a 15-mm radiopaque foreign body in the right lower quadrant corresponding to the anatomic location of the ileocecal valve. The patient made an uneventful recovery after she spontaneously passed a 1.5 cm by 1 cm rock (15 mm) in her stool on the third day of admission. This case highlights the need for a high index of suspicion for unwitnessed ingestion of a foreign body in a previously healthy preschool child with sudden onset of a movement disorder.

Accidental foreign body (FB) ingestion is common in children, with a peak incidence of occurrence between 6 months and 3 years of age. In 2000, the American Association of Poison Control Centers reported >107 000 incidents of FB ingestion by children and adolescents.[1–3]

Children often swallow readily available items, such as coins, toy parts, jewelry, or batteries. A myriad of gastrointestinal (GI), respiratory, or nonspecific symptoms, ranging from choking, drooling, poor feeding, vomiting, dysphagia, odynophagia, wheezing, stridor, chest pain, or fever, have been widely reported after ingestion or aspiration of an FB in children. The type of FB ingested, the time since ingestion, the location of the FB in the GI tract, as well as history and physical examination all play a role as to how the clinician will manage the patient.[4,5]

We report a case of a 10-month-old girl who presented with lethargy and movement disorder characterized by neck extension with arching of her lower body after an unwitnessed ingestion of a rock (midsized pebble). This is the first case in the pediatric literature of a FB ingestion associated with acute onset of a movement disorder.

PATIENT INFORMATION

Our patient was a 10-month-old girl taken to the emergency department of the referring hospital because of changes in her mental status. According to her mother, the patient was sleepier than usual and unable to walk or crawl, even though she had attained these milestones before the

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Dr Akingbola took care of the patient in the PICU and drafted the manuscript; Drs Singh and Blecker were involved in the review of the manuscript before submission; and all authors approved the final manuscript submitted and agreed to be accountable for all aspects of the work.

DOI: 10.1542/peds.2016-1967

Accepted for publication Sep 15, 2016

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PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: No external funding.

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

To cite: Akingbola O, Singh D, Blecker U. Movement Disorder Associated With Foreign Body Ingestion. *Pediatrics.* 2017;139(1):e20161967

TABLE 1 Timeline and Clinical Course in the PICU

Admission Day (Hours of Admission)	Clinical Status and Pertinent Findings	Management
Day 1, 0–5 h	• Stable vital signs • Intermittent bouts of irritability, arching, and head extension	• Nothing per oral • Intravenous fluids, levetiracetam, antibiotics, antiviral therapy pending CSF analysis
	• Laboratory investigations, head CT, toxicology screens, and chest radiographs are normal	• Obtain EEG • Obtain ABUS
6–11 h	• Irritability with arching occurs intermittently • Patient consolable between bouts of irritability • Normal EEG and normal CSF analysis • Normal ABUS	• Discontinue and antimicrobial agents, anticonvulsants • Allow oral intake as tolerated
Day 2, 24 h	• Normal sensorium between bouts of irritability • Tolerating fluids • Obtain ABXrays	• ABXray revealed an opacified FB in the right upper quadrant (Fig 1)
36 h	• Serial ABXrays showed migration of foreign body from lower GI tract into the rectum (Fig 2)	• Stop antiviral agents
	• Patient more alert and interactive	• Allow oral feeds as tolerated • Continue to check for passage of FB via rectum
Day 3 (72 h)	• Patient more interactive • Patient passed a 1.5 cm by 1 cm (15 mm) rock in her stool	• Discharged from PICU to the pediatric ward

onset of her illness. The patient has no significant past medical history and no history of exposure to any medication or toxin. Our patient does not attend day care and has no recent episode of fever, viral prodromal illness, and no history of sick contacts. Her developmental history revealed that she crawled at 6 months, walked at 9 to 10 months, and achieved appropriate social milestones. A review of systems revealed decreased activity and lethargy but no history of vomiting, diarrhea, or hematochezia

Physical examination revealed a well-nourished child with a height of 79 cm (>98th percentile), a weight of 9.4 kg (50th percentile), and a head circumference of 44.5 cm (50th percentile). The patient was irritable but consolable. While crying, she would extend her neck and arch her back. She was afebrile and her vital signs showed a heart rate of 130 beats per minute, her blood pressure was 119/80 mm Hg, and her respiratory rate was 30 breaths per minute. Central nervous system (CNS) examination revealed an irritable child with periodic arching and neck extension; however, there was no nuchal rigidity and her muscle tone and strength were normal between bouts of abnormal movements. Physical examination findings for other systems were normal, including a soft, nontender abdomen without guarding and no palpable organs. Laboratory investigations included a complete blood count, complete metabolic panel, computed tomography (CT) of the head, and a lumbar puncture. Blood and urine samples were obtained for toxicology and culture. Intravenous fluid consisting of 5% dextrose in half-normal saline was started at a maintenance infusion rate of 40 mL/hr. The patient was admitted to the PICU with an initial presumptive diagnosis of epileptiform movement disorder; she was loaded with 20 mg/kg of levetiracetam and an EEG was ordered. Although she continued to have occasional bouts of arching and irritability, there were no EEG correlates of seizure activity. Later in her PICU course, she became more consolable between bouts of irritability. She was started on empirical antibiotics (vancomycin, ceftriaxone) in addition to acyclovir pending the outcome of CSF, blood, and urine cultures. All investigations, including the results of CSF analysis, were normal. The patient's PICU course is depicted in Table 1.

DISCUSSION

Our patient presented with periodic arching of her lower body coupled with recurrent bouts of irritability and lethargy that was initially diagnosed as an "epileptiform" movement disorder. However, the diagnosis of an epileptiform movement disorder is unlikely in this case because of the nature of the movements in a previously healthy child without a previous history of seizures; in addition, her EEG and CSF analysis were normal. Intussusception was considered a possible diagnosis despite a normal abdominal ultrasound (ABUS) because studies have indicated that 17% to 38% of especially younger children presenting with intussusception may present with neurologic symptoms, which are sometimes the dominant symptoms, and the typical abdominal symptoms may be absent, which was the case for our patient.[6–9] An abdominal radiograph (ABXray) obtained because of intermittent bouts of arching and irritability (high suspicion for intussusception) led to a fortuitous diagnosis of FB ingestion when it revealed a 15-mm radiopaque FB in the right lower quadrant (Fig 1) corresponding to the anatomic location of the ileocecal valve (ICV). The ABUS obtained initially did not identify the FB

probably because it was obscured by shadowing from surrounding loops of the distended, fluid-filled small bowel.

Our patient's symptoms probably resulted from a FB lodged in the lower GI tract because her negative laboratory investigations coupled with relief of her symptoms after passage of the FB preclude existence of any other plausible theory to explain these symptoms. Symptoms displayed by children after ingestion of a FB depend on the type of FB, the size, and the location within the GI tract. At ~15 mm in size, with smooth edges and a pointed end (Fig 1), the piece of rock ingested by our patient must have traversed the esophagus without impaction; this could explain the absence of symptoms of esophageal obstruction, such as drooling, choking, or vomiting, in our patient. Our patient could only have presented with symptoms of esophageal obstruction if the ingested piece of rock was lodged where esophageal obstruction is most likely; for example, a FB lodged at the level of the upper esophageal sphincter, the mid-esophagus, or the lower esophageal sphincter is likely to produce symptoms of esophageal obstruction[10,11]; absence of symptoms of esophageal obstruction in our patient contributed to the delay in diagnosis of FB ingestion, as did the fact that the incident was not witnessed by her parents. In addition, one would have expected her to manifest symptoms such as abdominal distension, pain, vomiting, hematochezia, and unexplained fever, as described in patients like her with an FB lodged in the lower GI tract,[10–12] but instead she presented with a movement disorder hitherto unreported with FB ingestion. These unusual symptoms resulted in unnecessary and expensive investigations in search of an occult CNS etiology consistent with her mode of presentation. The FB in our patient was lodged in the right lower quadrant, close to the anatomic location of the ICV. The ICV has been described as the location within the GI tract where ingested objects ≥15 mm in size are apt to become impacted.[13] It is probable that the ICV acted like an anatomic "choke point" because impaction of a 15 mm FB with rough edges (Fig 1) at this location could cause a transient obstruction of the small bowel; the ensuing small bowel obstruction might have caused intermittent colicky abdominal pain which manifested as a movement disorder with arching, irritability, and lethargy. These symptoms led to obtaining a head CT, a lumbar puncture, and an EEG that were not indicated. If our patient had presented with the typical symptoms of FB ingestion or if her parents had witnessed the incident, anterior–posterior and lateral radiographs of the abdomen would have sufficed as the initial diagnostic evaluation of a presumed FB ingestion.[10–13] Although our patient ingested a rock, her clinical course was similar to that described in children who ingested coins or other forms of FBs[14,15] because there was no need for an extraordinary intervention to retrieve the FB. Although there was no adverse outcome resulting from delay in diagnosis of this case, the fact remains that the cost incurred from hospitalization and performance of

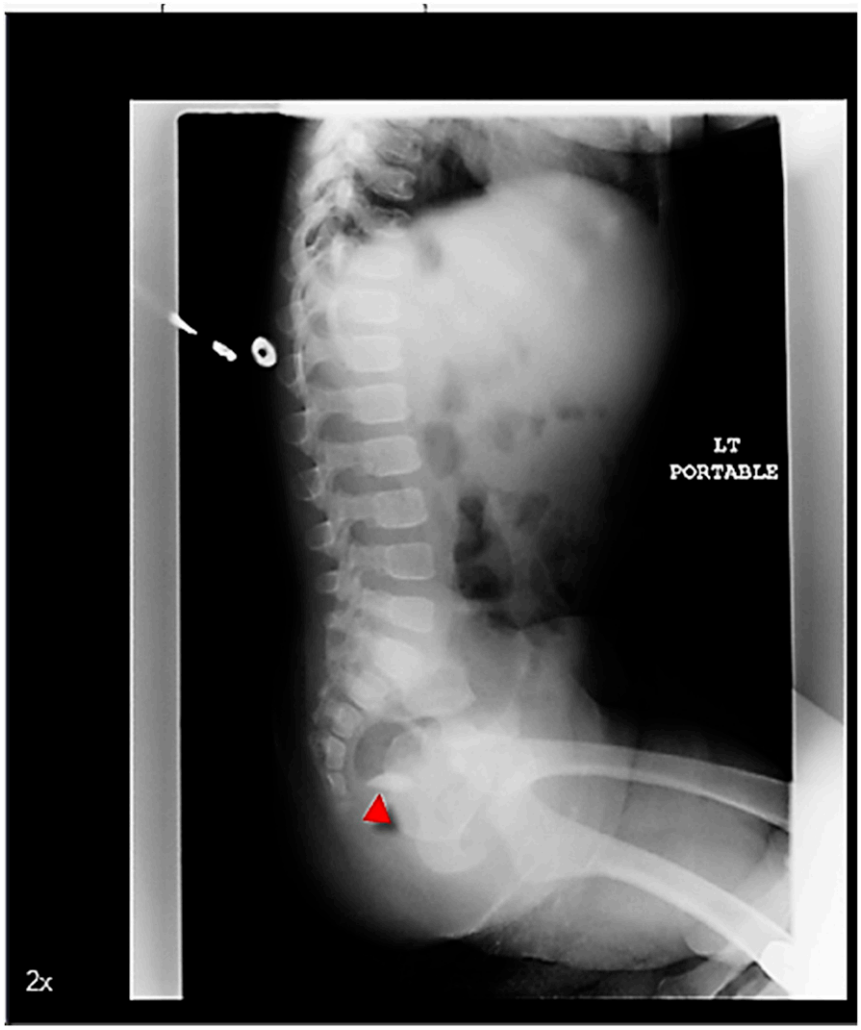

FIGURE 2
Left lateral radiograph of the pelvis revealed FB migration into rectum (day 3 of admission).

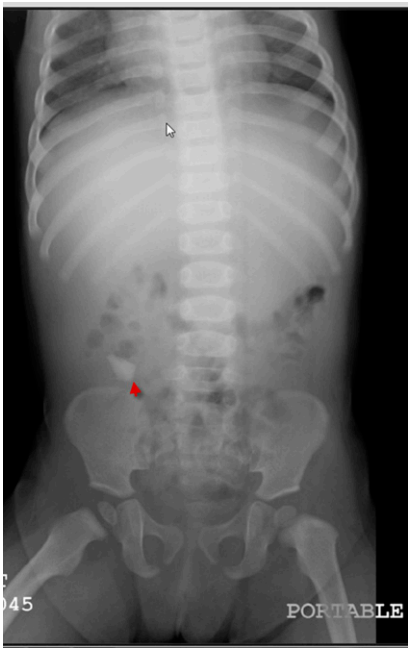

FIGURE 1
Arrow points at radio-opaque FB in the right lower quadrant (day 2 of admission).

unnecessary investigations could have been avoided; also, the potential for considerable harm exists whenever a child is made to undergo unnecessary and invasive procedures in the PICU.

CONCLUSIONS

Unwitnessed FB ingestion in a preschool child might mimic intussusception or occult CNS disease on presentation. There is a need for a high index of suspicion for FB ingestion in a preschool child with acute onset of movement disorder and lethargy.

ABBREVIATIONS

ABUS: abdominal ultrasound
ABXray: abdominal radiograph
CNS: central nervous system
CSF: cerebrospinal fluid
CT: computed tomography
FB: foreign body
GI: gastrointestinal tract
ICV: ileocecal valve

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Pediatrics 2017;139;
DOI: 10.1542/peds.2016-1967 originally published online March 15, 2017;

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