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Adult ileocolic intussusception secondary to infectious enterocolitis: anecdotic cause of an uncommon condition

Case Report

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Abstract: Introduction. In contrast to pediatric intussusception, 90% of adult intussusceptions will have a leading point, with the others being idiopathic. We discuss a case of ileocolic intussusception secondary to infectious enterocolitis caused by *Salmonella enteritidis*. Case Report. An adult female patient was admitted, complaining of colicky abdominal pain associated with diarrhea lasting for 5 days. Abdominal ultrasonography and a CAT scan showed the classic target or doughnut sign and the pseudokidney sign. Surgical exploration revealed that the terminal ileum, cecum, appendix, and 10 cm of ascending colon were intussuscepted into the remaining ascending colon. Abdominal free-fluid was aspirated for culture that yielded a *Salmonella enteritidis*. A right hemicolectomy with primary anastomosis was performed. The histology report showed an edematous thickened terminal ileum wall with necrosis of Peyer's patches. Discussion. Symptoms related to adult intussusception are unspecific; therefore, most diagnoses are made from imaging studies or during surgical exploration. This patient would probably have been classified as idiopathic; however, the culture of peritoneal fluid yielded *Salmonella enteritidis*, which together with the patient's clinical picture explained the intussusception as secondary to *Salmonella enterocolitis*. Conclusion. Although rare, *Salmonella* infections should be considered among the precipitating causes of adult ileocolic intussusception.

Keywords: *Adult intussusception • Ileocolic intussusception • Infectious enterocolitis • Salmonella enteritidis • Intestinal obstruction*

1. Introduction

Intussusception is the invagination of a segment of the gastrointestinal tract into an immediately adjacent portion [1,2]. The exact mechanism that precipitates intussusception is still unknown, but it is believed that any lesion in the bowel wall or irritant contents within the bowel lumen may alter the normal peristaltic pattern, starting the process of invagination [1]. Adult intussusception is rare, accounting for only 5% or less of all reported cases [2,3]. In contrast to pediatric intussusception, 90% of adult intussusceptions will have a leading point, usually a malign neoplasm, while the remaining 10% are considered idiopathic [2]. In children, infectious causes account for over 90% of intussusceptions; however, in adults, infectious causes have been anecdotic. Ileocolic intussusception associated to *Salmonella typhimurium* infection has been previously reported on only one occasion, constituting an extremely uncommon occurrence [4]. Ileocolic intussusception accounts for less than 10% of all adult intussusceptions, being a rather uncommon condition [3].We discuss a case of ileocolic intussusception associated with infectious enterocolitis caused by *Salmonella enteritidis*.

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2. Case report

A female patient, 35 years old, was admitted to our institution complaining of 5 days of colicky diffuse abdominal pain associated with diarrhea. She did not have fever; her heart rate and blood pressure were normal. The abdomen was tender over the right inferior abdominal quadrant without peritoneal signs. Laboratory values were within normal ranges except for C-reactive protein levels, which were mildly increased (34 mg/l). Abdominal ultrasonography showed the classic features of intussusception, the target or doughnut sign on transverse view (Figure 1A) and the pseudokidney sign in the longitudinal view (Figure 1B). The study was completed with a CAT scan, which showed a characteristic pseudokidney mass in axial views (Figure 2A); in lower views, double edematous intestinal lumens could be seen. The CAT scan coronal (Figure 2B) and oblique views showed the terminal ileum and cecum telescoping into the ascending colon. Surgical exploration revealed that the terminal ileum, cecum, appendix, and 10 cm of ascending colon were intussuscepted into the remaining ascending colon. A moderate quantity of abdominal inflammatory free-fluid was encountered and aspirated for culture. Manual reduction was uncomplicated and

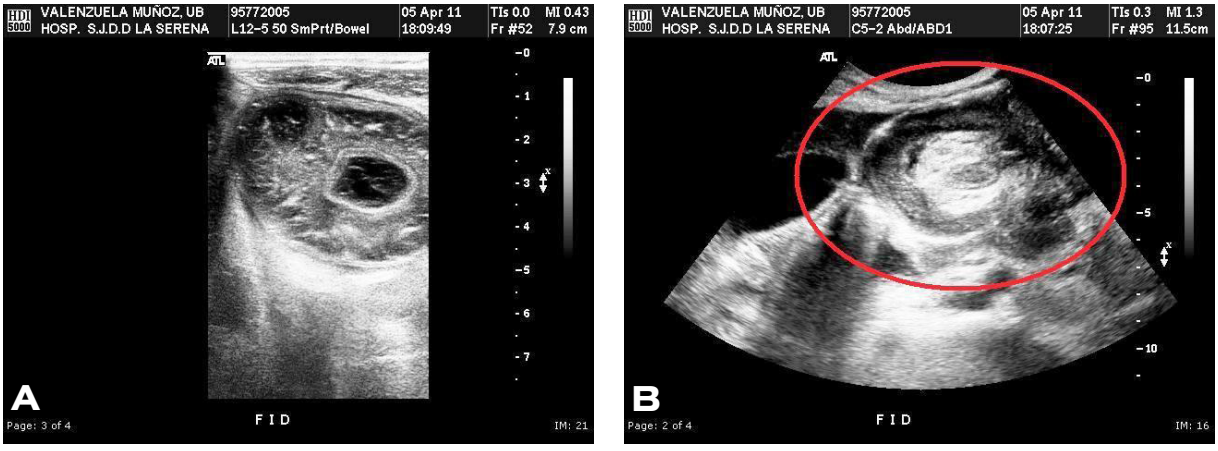

Figure 1. A Abdominal ultrasound focusing over the right lower abdominal quadrant, where the classic "target sign", also known as the "doughnut sign", was revealed. These signs are pathognomonic of intussusception.

B Longitudinal view showing the "pseudo-kidney sign", another pathognomonic intussusception sign.

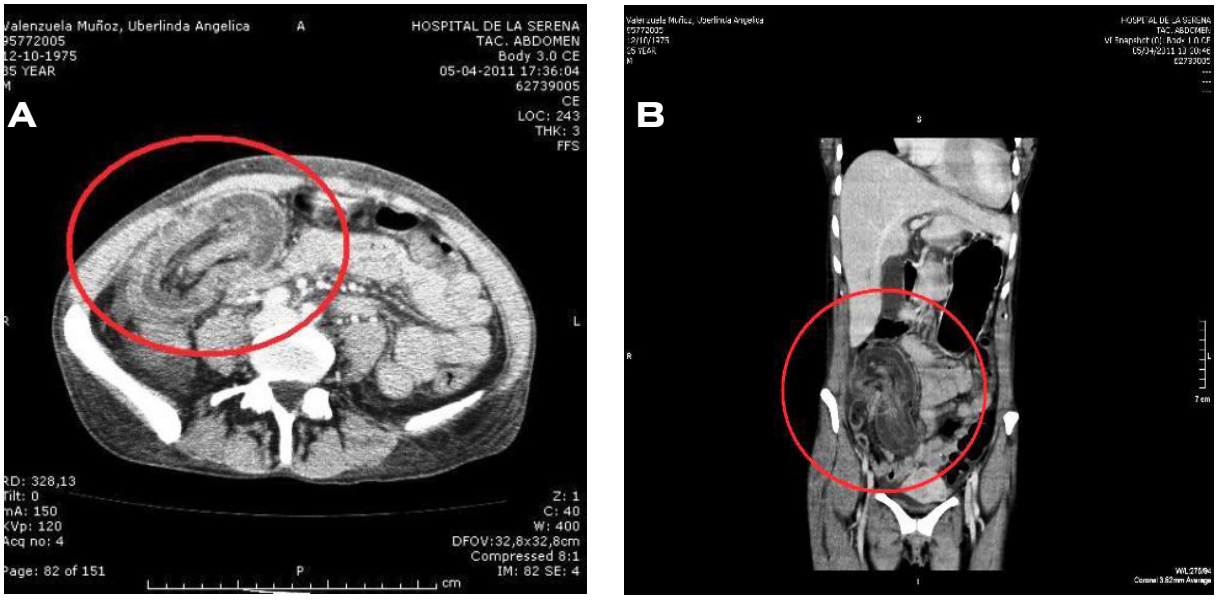

Figure 2. A Computed abdominal tomography scan, axial view showing the characteristic "pseudo-kidney" sign present in cases of intestinal intussusception.

B Coronal view showing the distal ileum intussuscepted into the ascending colon.

showed that the cecum and the intussuscepted ascending colon were necrotic. A right hemicolectomy with primary anastomosis was performed. The postoperative period was uneventful, and the patient was discharged home asymptomatic. The culture report of the abdominal liquid confirmed *Salmonella enteritidis*. The histology reported an edematous and thickened terminal ileum wall with necrosis of Peyer's patches infiltrated by polymorphonuclear cells.

3. Discussion

Symptoms related to adult intussusception are unspecific; therefore, most diagnoses are made with imaging studies or during surgical exploration. Abdominal ultrasound and CAT scans are widely available imaging studies capable of diagnosing intussusception and identifying the possible cause of this condition [5,6]. The findings on abdominal ultrasound and CAT scan of this patient were typical of intussusception, allowing preoperative diagnosis. However, in this case, the performed imaging studies did not reveal the cause of intussusception; it was not apparent during surgery and was clarified only after the result of the peritoneal fluid culture became available.

Most publications on adult intussusception report less than 10% cases as idiopathic [1-7]. Probably, this patient would have been classified as idiopathic; however, the culture of peritoneal fluid yielded *Salmonella enteritidis*, and together with the abundant diarrhea and colicky pain experienced before she was admitted, led us to explain the intussusception as secondary to *Salmonella* enterocolitis. The cause of intussusception in patients with *Salmonella enteritidis* enterocolitis could be related to overstimulation of the intestinal mucosa and to the inflammatory changes and necrosis of the Peyer´s patches, that together result in an edematous, thickened mass-like wall in the terminal ileum acting as a leading point for intussusception. Only one previous case secondary to *Salmonella typhimurium* enterocolitis has been reported [4]. The present case report constitutes the second ever reported in English literature pertaining adult intussusception secondary to *Salmonella* enterocolitis, and the first implicating *Salmonella enteritidis*. The importance of this case report, together with other previously published cases, is that both establish infectious causes within the differential diagnosis of adult intussusception; infectious causes of intussusception are common in children, but not in adults.

4. Conclusion

Although rare, *Salmonella* infections should be considered among the precipitating causes of adult ileocolic intussusception.

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Conflict of interest

None.

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