

Diagnostic Difficulties of Cecal Epiploic Appendix Torsion in Children's: A Case Report

IsberAdemaj^{1*}, Fisnik Kurshumliu² and Kujtim Ukeperaj¹

¹Department of Pediatric Surgery, University Clinical Centre, Lagja e Spitalit PN, Prishtina 10000, Kosovo

²Department of Pathology, University Clinical Centre, Lagja e Spitalit PN, Prishtina 10000, Kosovo

*Corresponding author: Isber Ademaj, Department of Pediatric Surgery, University Clinical Centre, Lagja e Spitalit PN, Prishtina 10000, Kosovo, E-mail: isberademaj@gmail.com

Citation: Ademaj I, Kurshumliu F, Ukeperaj K (2020) Diagnostic Difficulties of Cecal Epiploic Appendix Torsion in Childrens: A Case Report. J Pediatr Care Vol.6 No.3: 46.

Received date: June 01, 2020; **Accepted date:** June 15, 2020; **Published date:** June 23, 2020

Abstract

Epiploic appendix are rarely found in the children's cecum usually during surgical exploration. Very rarely cause acute abdominal pain due to their torsion or inflammation that according to their localization can mimic other causes of abdominal pain. Usually torsion or inflammation of epiploic appendages are found as cause of acute abdominal pain after 4th decade of life but very rare cause abdominal pain in children. Vast majority of their torsion occur in recto-sigmoid colon, but rarely in cecum mimicking acute appendicitis as a most often cause of acute abdominal pain in children's. The purpose of this study is to reveal preoperative diagnostic difficulties of cecal epiploic appendix torsion in children due to its confusion with other abdominal condition that cause acute abdominal pain in right lower quadrant. Main factors that lead to its misdiagnosis are its rarity in children, unusual symptoms, absence of specific laboratory and radiological characteristic. We present a case of a 12-year-old Kosovo Albanian girl misdiagnosed preoperatively as acute appendicitis and found upon surgical exploration to have torqued tumor like mass in cecum. Uninflamed vermiform appendix and torqued mas like tumor in the cecum were removed and after HP examination was confirmed to be hemorrhagic infraction of epiploic appendix of the cecum due to its torsion. Data of patients who have undergone appendectomy during 2000-2017 were collected retrospectively and this is first case reported in our clinic diagnosed as cecal epiploic appendage torsion. We also review the literature trying to find much accurate methods and informations for diagnosing this pathology preoperatively to avoid unnecessary operation. Pediatric surgeons should consider more often computed tomography examination of abdomen as a best diagnostic tool for cecal epiploic appendix torsion especially when ultrasound reveal non inflamed vermiform appendix associated with normal or markedly elevated WBC count, to avoid unnecessary surgical exploration.

Keywords: Children; Cecal epiploic appendices; Appendix torsion

Introduction

Epiploic appendices of the colon are fatty structures covered with visceral peritoneum, mainly found in sigmoid colon decreasing in number toward cecum and in some cases they are pedunculated that make them predisposed to their torsion. In 1908, Briggs first reported a case of an epiploic appendix torsion mimicking appendicitis [1]. Epiploic appendagitis usually caused from torsion or inflammation of appendices epiploicae occurs most often beyond the fourth decade of life. Only few reports of caecal epiploic appendagitis involving young children have been published till date [2,3]. Although preoperative diagnosis is very difficult because of its rarity and similarity with other pathologies that cause RLQ abdominal pain, recognition of this pathology by pediatric surgeons is essential since it can be treated without surgery. Preoperative diagnosis of this condition is possible with computed tomography (CT) although it is rarely used in children's with acute abdominal pain.

Torsion or inflammation of appendices epiploicae in the caecum rarely are found as cause of acute abdominal pain (in RLQ) in children and is usually mistaken for acute appendicitis. More often their torsion happened in sigmoid colon which is more mobile and they are much more in number in this part of colon. Depending on the site of occurrence, it can mimic different pathologies causing acute abdominal pain, and as in majority of cases epiploic appendix torsion is misdiagnosed preoperatively.

Case History

A 12 year-old girl Kosovo Albanian nationality referred in our pediatric surgery department because of acute onset abdominal pain in the right lower quadrant that had begun a night before admission. She was treated initially in the morning of next day with analgesics in regional hospital but the pain returned 6 hours later and she was admitted in our department for evaluation on suspicion of acute appendicitis. At admission, she had constant RLQ pain, nausea and anorexia but no vomiting, no elevated temperature and pulse rate was 86 beats per minute. On abdominal examination, localized abdominal guarding,

localized rebound tenderness in the right iliac fossa were noted. The white blood cell count was $12.7 \times 10^3/\text{mm}^3$, hemoglobin was 12.4 g/dL, hematocrit 34.5% and platelets $143 \times 10^3/\text{mm}^3$. Urine and blood biochemical examinations were normal. Abdominal ultrasonography couldn't visualize vermiform appendix or solid hyperechoic mass, but revealed minimal inter-loop free fluid and few dilated gut loops in the right iliac fossa (**Figure 1**). A presumptive diagnosis of acute appendicitis was made. The patient was operated on emergency basis and abdomen was accessed through Mcburney's incision. Small amount of serosanguinous fluid was aspirated. The vermiform appendix was not inflamed but around 3 centimeters near to the base of appendix vermiformis on the most distal part of caecum, twisted 1.1 cm^2 wide and 2.5 cm long pedunculated epiploic appendix was noticed (**Figure 2**). Mesentery lymph nodes were not enlarged, right adnexa, terminal ileum and cecum were grossly normal. Appendectomy and complete removal of the appendix epiploic from its base on cecum and serosa closer were performed. The histological examination of the specimen revealed an ischemic infarct of adipose tissue in the twisted epiploic appendix, while the histological examination of the vermiform appendix was normal (**Figure 3**). Patient recovered without any early postoperative complications and was discharged the second postoperative day.

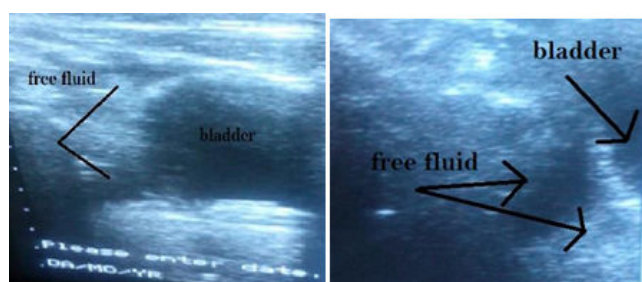


Figure 1: Minimal free (inter-loop) fluid.

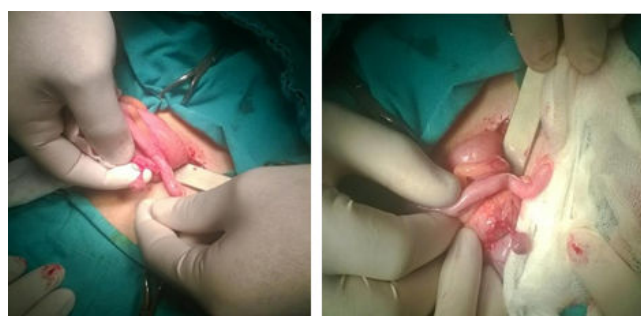


Figure 2: Torsion of appendix epiploic of the caecum with normal appendix vermiform.

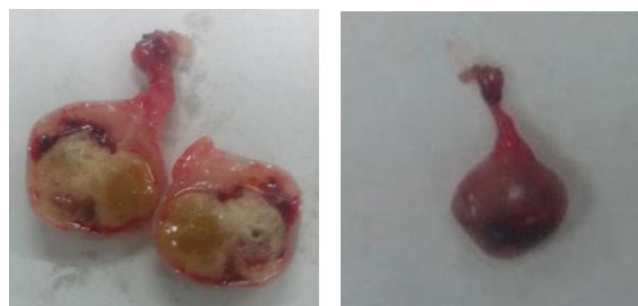


Figure 3: Ischemic infarct of the appendix epiploic adipose tissue.

Discussion

Epiploic appendices are small pedunculated fatty pouches on colons antimesenteric surface. They are composed of adipose tissue and blood vessels arising from serosal of colon surrounded with peritoneum, usually less than 5 cm in length. Their peduncle shape and mobility, make them prone to spontaneous torsion which usually occurs beyond 4th decade of life, predominantly in men [4-7]. Although acute appendicitis is the main cause of acute abdominal pain in children, torsion of epiploic appendix in children it's rarely considered among pediatric surgeons (in pediatric surgery literature) since it rarely is cause of acute abdominal pain especially in pediatric population. Epiploic torsion is rarely seen in patients younger than 19 years and is almost unknown in children, only few case reports of epiploic appendagitis involving caecum in children have been published in literature [2,3,8-12]. In 1908, Briggs first reported a case of an epiploca appendix torsion (appendagitis) mimicking appendicitis [1]. With diagnosis based on clinical manifestations alone, torsion of cecal epiploic appendix is misdiagnosed in the majority of patients. In a series of 1,320 cases of acute abdominal pain by Golash et al. only eight cases were due to acute epiploic appendagitis [13]. The preoperative diagnosis could be suspected in patients who had clinical signs and symptoms of acute appendicitis and a history of appendectomy [14]. Epiploic appendagitis may be primary caused by torsion or spontaneous venous thrombosis or secondary appendagitis caused from inflammation of adjacent organs, such as diverticulitis, appendicitis, cholecystitis. Epiploic appendices are affected also by calcification due to aseptic fat necrosis, Pericolic abscess and incarceration in hernias [9]. Thomas et al reviewed 197 cases from the literature and 11 of their own cases of acute epiploic appendagitis and classified each according to its cause: torsion and inflammation (73%), hernia incarceration (18%), intestinal obstruction (8%), and intraperitoneal loose body (1%).

Torsion of cecal epiploic appendix is rarely diagnosed preoperatively due to the lack of pathognomonic clinical features which are nonspecific. Most patients manifests with acute onset localized abdominal pain of variable intensity and duration. There can be signs of peritoneal irritation [15]. The pain may be exacerbated by coughing, deep breathing or stretching because the infarcted appendage is adherent to the

parietal peritoneum. Nausea, vomiting and loss of appetite are rare symptoms. In most of the cases can be marginally leukocytosis. In general, acute epiploic appendagitis mostly happen in sigmoid colon decreasing in frequency toward descending colon, cecum and ascending colon [9]. Depending on the site of occurrence, they can be confused other intra abdominal pathologies leading to clinical misdiagnosis in most patients. Acute epiploic appendagitis involving sigmoid colon can mimic diverticulitis of sigmoid colon, if proximal part of transverse colon is involved it may mimic acute cholecystitis[15], in the caecum it may mimic acute appendicitis or any other cause of acute pain in the right lower abdomen like regional enteritis, ovarian torsion or a ruptured ovarian cyst, salpingoophoritis, typhlitis and perityphlitis [16,17]. The condition is self limited, and the symptoms usually resolve within 1 week (mean of 4.7 days) without surgical treatment [2,18]. Conservative treatment with non-steroid anti-inflammatory medication is sufficient. Recognition of these conditions on CT images will prevent unnecessary hospital admission, antibiotic therapy, laboratory tests and unnecessary surgery. Typically, the epiploic appendages are visible on CT images when they are inflamed and/or surrounded by fluid. Accurate assessment of the CT features of these conditions is important for selecting the appropriate mode of management and preventing unnecessary hospital admission and surgery. CT images from less than 8% of patients evaluated for exclusion of sigmoid diverticulitis or appendicitis show features of primary acute epiploic appendagitis [7,19]. The presumed diagnosis of this condition is primarily based on the CT features of the oval lesion less than 5 cm in diameter with slightly higher attenuation than peritoneal fat and with surrounding inflammatory changes appearing as a fatty mass, which is connected to the serosal surface in antimesenteric side of colon and has [20-23]. Detection by ultrasound of a solid, well-delineated hyperechoic mass, at the site of maximum tenderness adjacent to the colonic wall and absence or lack of blood flow seen on color Doppler images may suggest the diagnosis [19,20,24]. Magnetic resonance findings include an ovoid mass with a central portion of the mass seen as hyperintense and peripheral as hypointense on T1 and T2-weighted images [2,25].

Nowadays, laparoscopy has been found to be useful for both diagnosis and treatment of cecalepiloica appendix torsion [11,26]. If the diagnosis is made upon exploration, it should be removed and do seromuscular inversion of the affected portion of gut should be performed [3].

Conclusion

In conclusion, torsion of cecal epiploic appendix continue to be difficult to diagnose. Almost all patients with acute abdominal pain caused from torsion of cecal epiploic appendix potentially will be misdiagnosed preoperatively as other causes of acute abdominal pain in RLQ especially with acute appendicitis. Pediatric surgeons should consider it more often as a potential cause of acute abdominal pain in RLQ in children's especially in appendectomized patients and when associated with lack of laboratory and radiologic futures of acute appendicitis. Ultrasound and especially CT and MRI imaging

techniques can potentially diagnose torsion of epiploic appendix. Since they are not used routinely in children with acute abdominal pain, except in very doubtful-confused and severe cases, preoperative diagnosis of cecal epiploic appendix torsion will continue to be difficult and almost all of them will be diagnosed intraoperatively. Since it can be treated conservatively, when suspected, it should be confirmed with CT or MRI examination of abdomen as a best diagnostic tool in order to avoid unnecessary surgical exploration. When encountered during surgical abdominal exploration especially when they are pedunculated and predisposed to torsion it should be removed together with "no inflamed" vermiform appendix to avoid potential confusion with other surgical causes of acute abdominal pain in RLQ in the future. It should be removed also in recurrent cases previously diagnosed and treated conservatively.

Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Conflict of Interest

The following authors have no financial disclosures: (Isber Ademaj, Fisnik Kurshumliu, Kujtim Ukeperaj).

Authors Contributions

Isber Ademaj carried out design of the study, data collection, drafted the manuscript and was a major contributor in writing the manuscript. Kujtim Ukeperaj performed the literature review and was involved in writing the manuscript. Fisnik Kurshumliu performed histological examination of the epiploic appendage, supervision and analysis of the literature. All authors read and approved the final manuscript.

References

1. Briggs WA (1908) Torsion of appendices epiploicae and its consequence. *Am J Med Sci* 135: 864-870.
2. Christianakis E, Paschalidis N, Filippou G, Smailis D, Chorti M, et al. (2009) Cecal epiploica appendix torsion in a female child mimicking acute appendicitis: A case report. *Cases J* 2: 3-5.
3. Gupta V, Kumar S (2008) Appendicitis epiploicae: An unusual cause of acute abdomen in children. *J Indian Assoc Pediatr Surg* 13: 83-84.
4. Pereira JM, Sirlin CB, Pinto PS, Brooke JR, Stella DL, et al. (2004) Disproportionate Fat Stranding: A Helpful CT Sign in Patients with Acute Abdominal Pain. *Radiographics* 24: 703-715.
5. Zissin R, Hertz M, Osadchy A, Kots E, Shapiro-Feinberg M (2002) Acute epiploic appendagitis: CT findings in 33 cases. *Emerg Radiol* 9: 262-265.
6. Son HJ, Lee SJ, Lee JH, Kim JS, Kim Y-H, et al. (2002) Clinical diagnosis of primary epiploic appendagitis: Differentiation from acute diverticulitis. *J Clin Gastroenterol* 34: 435-438.

7. Legome EL, Belton AL, Murray RE, Rao PM, Novelline RA (2002) Epiploic appendagitis: The emergency department presentation. *J Emerg Med* 22: 9-13.
8. Ozturk M, Aslan S, Saglam D, TumayBekci MC (2018) Epiploic appendagitis as a Rare Cause of Acute Abdomen in the Pediatric Population: Report of Three Cases. *Eurasian J Med* 50: 56-58.
9. Singh AK, Gervais DA, Hahn PF, Rhea J, Mueller PR (2018) CT appearance of acute appendagitis. *Ajr* 183: 1303-1307.
10. Rodionov LS (1987) Torsion and Necrosis of the Epiploic Appendage and the Greater Omentum in a Child 139: 82.
11. O'Rourke RW, Saito JM, Albanese CT (2001) Laparoscopic Diagnosis and Resection of Pediatric Appendicitis Epiploicae: Case Report and Literature Review. *PediatrEndosurgInnov Tech*. 5: 319-322.
12. Fraser JD, Aguayo P, Leys CM, St. Peter SD, Ostlie DJ (2009) Infarction of an epiploic appendage in a pediatric patient. *J Pediatr Surg* 44: 1659-1661.
13. Golash V, Willson PD (2005) Early laparoscopy as a routine procedure in the management of acute abdominal pain: A review of 1,320 patients. *SurgEndosc Other Interv Tech* 19: 882-885.
14. Thomas JH, Rosato FE, Patterson LT (1974) Epiploic appendagitis. *Surg Gynecol Obstet* 138: 23-25.
15. Shirokikh VV (1972) Torsion of an epiploic appendage of the transverse colon simulating acute cholecystitis. *VestnKhirlm I IGrek* 109: 102-103.
16. Boardman J, Kaplan K, Hollcraft C, Boardman J, Kaplan K, et al. (2003) Torsion of the epiploic appendage. *AJR Am J Roentgenol* 180: 748.
17. Dockerty MB, Lynn TE, Waugh JM (1956) A clinicopathologic study of the epiploic appendages. *Surg Gynecol Obstet* 103: 423-433.
18. Vriesman ACVB, Lohle PNM, Coerkamp EG, Puylaert JB (1999) Infarction of omentum and epiploic appendage: Diagnosis, epidemiology and natural history. *Eur Radiol* 9: 1886-1892.
19. Mollà E, Ripollés T, Martínez MJ, Morote V, Roselló-Sastre E (1998) Primary epiploic appendagitis US and CT findings. *Eur Radiol* 8: 435-438.
20. Rioux M, Langis P (1994) Primary epiploic appendagitis clinical, US, and CT findings in 14 cases. *Radiology* 191: 523-526.
21. Rao PM, Wittenberg J, Lawrason JN (1997) Primary epiploic appendagitis evolutionary changes in CT appearance. *Radiology* 204: 713-717.
22. Danielson K, Chernin MM, Amberg JR, Goff S, Durham JR (1986) Epiploic appendicitis: CT characteristics. *J Comput Assist Tomogr* 10: 142-143.
23. De Brito P, Gomez MA, Besson M, Scotto B, Hutten N, Alison D (2008) Frequency and epidemiology of primary epiploic appendagitis on computed tomography in adults with abdominal pain in French. *J Radiol* 89: 235-243.
24. Danse EM, Van Beers BE, Baudrez V, Pauls C, Baudrez Y, et al. (2001) Epiploic appendagitis: Color Doppler sonographic findings. *Eur Radiol* 11: 183-186.
25. Boscarelli A, Frediani S, Ceccanti S, Falconi I, Masselli G, et al. (2016) Magnetic resonance imaging of epiploic appendagitis in children. *J Pediatr Surg* 51: 2123-2125.
26. Chowbey PK, Singh G, Sharma A, Khullar R, Soni V, et al. (2003) Torsion of appendices epiploicae presenting as acute abdomen: Laparoscopic diagnosis and therapy. *Indian J Gastroenterol* 22: 68-69.