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Case Report

Tuberculous Intestine Presenting as Giant Colonic Diverticulum

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Abstract: Colonic diverticular disease is relatively common in the western hemisphere but a giant colonic diverticulum (GCD) is an unusual finding. A case of GCD with radiographic features suggestive of an appendicular mucocele/ intussusception is reported. At surgery a diagnosis of an appendicular pyocele was considered. The present case makes interesting reading due to it occurring against a background of tuberculosis in a patient much younger than that reported in literature and due to an unusual pathogenesis. Due to its gross appearance and location, GCD can be distinguished from other diseases of the gastrointestinal tract which can have similar characteristics on physical examination and imaging studies. The severe complications of the giant colonic diverticulum and its surgical significance make this condition important to recognize.
Keywords: Giant colonic diverticulum, Tuberculosis.

INTRODUCTION

Diverticular disease of the colon is a common benign condition that develops due to out pouching of layers of the colon due to various causes. Prevalence of the disorder is largely age dependent, with a rate of less than 5% in people under 40 years of age, increasing up to 65% in people aged 65 years or over [1]. Giant Colonic Diverticulum is usually defined as a diverticulum measuring more than 4 cm in diameter [2]. It has equal incidence in both males and females. Sigmoid Colon is affected in 90% of cases [3]. The first case was reported by Bonvin and Bonte in 1946 [4]. In the present article a case of giant pseudo-diverticulum occurring against the background of tuberculous infection is presented.

CASE REPORT

An 11 year old female was hospitalized with complains of severe abdominal pain in the right iliac fossa.On examination a tender mass was felt in right iliac fossa.

Ultrasonography was done and a diagnosis of an appendicular mucocele or intussusception given (Fig. 1 a and b). Other laboratory investigations showed no significant abnormal findings.

On opening the abdomen a tubular structure attached to the caecum was observed which appeared markedly distended due to its fluid content. About 20 ml of brownish fluid was drained from the tubular structure (Fig. 2 a and b). Appendix could not be identified and surgeons interpreted this tubular structure as an enlarged appendicular mass. The specimen was sent for histo-pathological examination.

Histopathological examination

Gross

The specimen consisted of a tubular structure measuring 18 cm in length. The resected margins appeared congested. At one end of the resected site, a mucosal protrusion was noted and was suspected as being an ileocaecal mucosa/valve. The wall was markedly thickened and 5 cm from the distal end an ulcer was noted on the mucosal aspect. Representative bits were taken from the resected margins, ulcerated area and other thickened areas. Tissue was processed and embedded in paraffin blocks and 4 microns thick section were taken and stained with the Haematoxylin and Eosin stain.

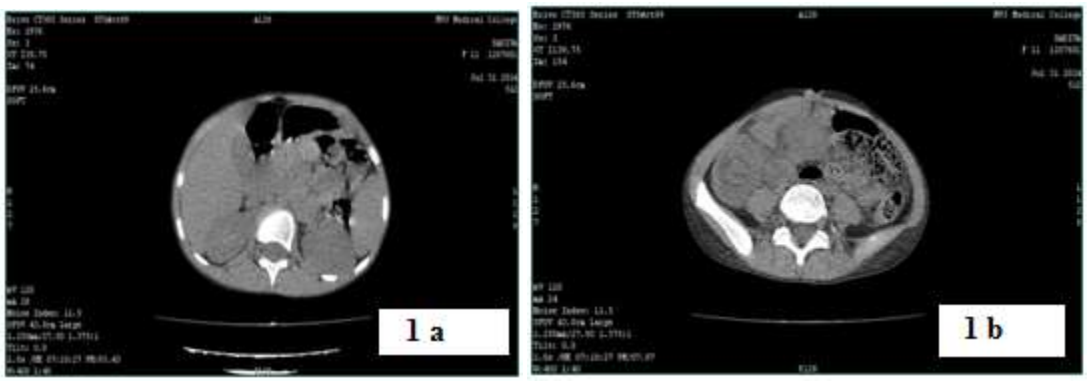

Fig. 1 a and b: The selected axial sections of Non-contrast computed tomography abdomen and pelvis, showed a large cystic lesion with thick walls and a calcific focus within, in right iliac fossa extending into the pelvis and displaying the small bowel loop to the left

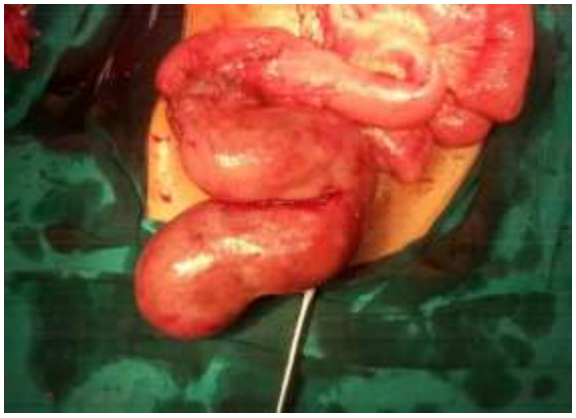

Fig 2 (a): A tubular structure attached to caecum

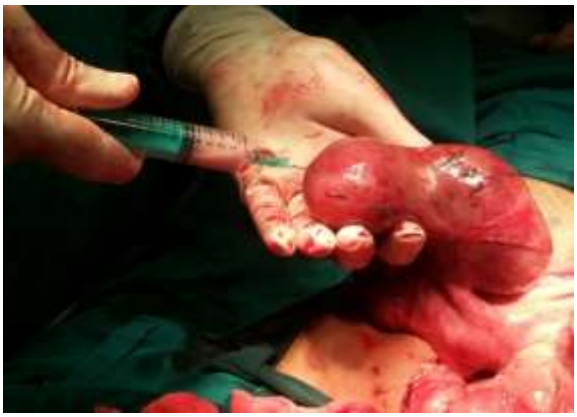

Fig. 2(b): 20ml of brownish fluid was drained out from the specimen

Microscopy

Sections from the resected surgical margin showed large intestinal mucosa, submucosa with evidence of ulceration and granulation tissue. Lymphoid aggregates were also noted. The wall of the tubular structure all along showed mucosa, submucosa and muscularis mucosae of large intestine. Outer lining also showed congestion and edema and absence of muscularis propria. Incipient poorly formed granulomata were also identified in the submucosa; the ZN Stain revealed groups of acid fast bacilli in the macrophages. From the above findings a final diagnosis was made of a pseudo diverticulum probably arising from a rudimentary appendix with tuberculosis.

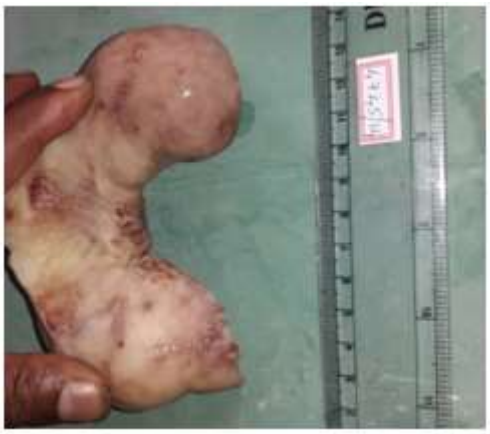

Fig. 3(a): Specimen consisting of loop of diverticulum measuring 18cm in length18cm in length

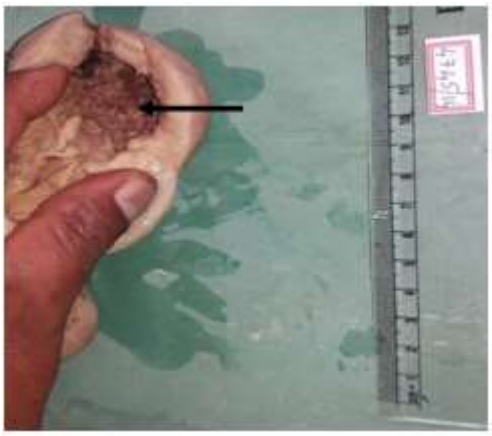

Fig. 3(b): Cut section of the resected specimen showing collection of brownish fluid, ulcerated mucosaand thickened wall (arrow), 18cm in length

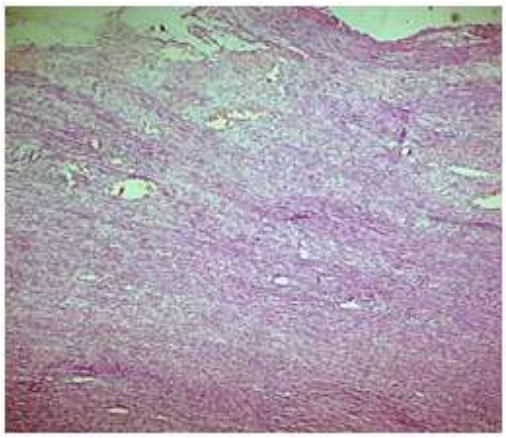

Fig. 4(a): Section from proximal end of diverticulae showing thickened muscular isexterna (40X)

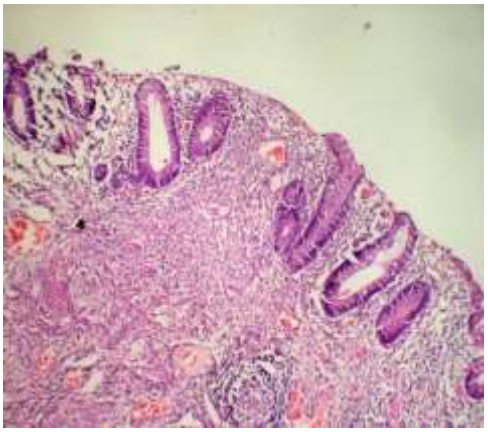

Fig. 4(b): Section from diverticulae showing mucosa and submucosa (10X)

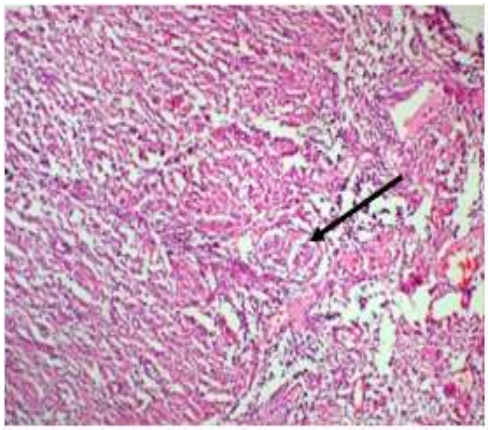

Fig. 5(a): Section from diverticulum showing ill-formed granuloma (arrow) (10X)

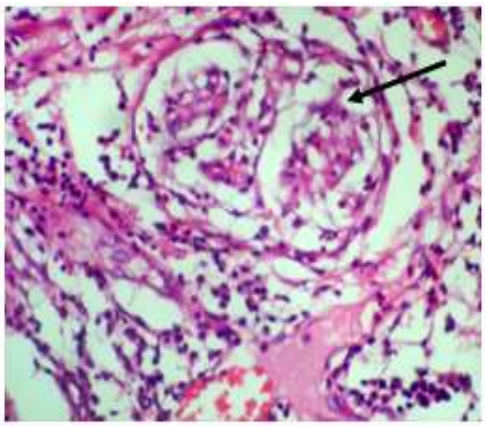

Fig. 5(b): Section from diverticulum showing ill-formed granuloma (arrow) (40X)

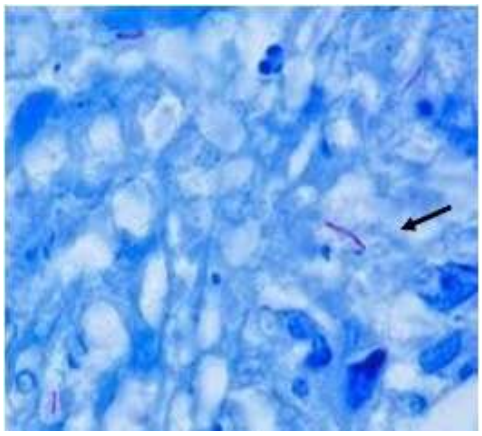

Fig. 5(c): ZN stain showing AFB positive (arrow) (100X)

DISCUSSION

Giant colonic diverticulum, described for the first time by Bonvin, is a rare disease [4]. Various individual case reports have described the condition by various names such as, "giant gas cyst," "giant colonic diverticulum," or "intestinal gas cyst" [5, 6].

95% of giant colonic diverticula are found on the anti-mesenteric side of the colon and in only a few cases the diverticulum is found on the mesenteric side of the bowel wall [6, 7]. The patients usually present with variable clinical features ranging from painful abdominal mass to rectal bleeding [8].

The disease is usually limited to the sigmoid colon, but cases have also been reported in the ascending, transverse, or descending colon [9, 10]. Colonic diverticulum is a pseudo-diverticulum because it is an out pouching of mucosa and submucosa of the bowel wall [11].

Types of diverticula

On the basis of pathology McNutt *et al*. [12] divided giant diverticula into 3 types.

Type I: Pseudo-diverticulum, composed of granulation tissue and fibrous tissue, with chronic inflammatory cells and remnants of muscularis mucosa.

Type II: Inflammatory diverticulum, arises from local perforation and communicates with an abscess cavity. Wall shows scar tissue only, no normal intestinal layers.

Type III: True diverticulum, contains all the layers of bowel wall [13].

The present case fits into the description of Type I giant diverticulum.

Two possible mechanisms have been hypothesized for the pathogenesis of giant diverticula. A ball-valve mechanism has been suggested, as a cause of a gradual increase in the size of a colonic diverticulum due to trapping of air till it transforms into a GCD [6, 10]. The mucosa and submucosa herniate through the muscularis mucosa and the resultant inflammation leads narrowing of the bowel lumen leading to a ball-valve mechanism where gas entering the diverticulum cannot exit due to one way communication [2, 6, 14-16]. These changes finally result in the radiological appearance described as a large, smoothly marginated, round or oval, homogenous radiolucency in the abdomen that may contain an air-fluid level [17].

A second theory proposed suggests that gas forming organisms located within the cyst may lead to further dilatation of the cyst [6, 16]. At first the neck or stalk of the diverticulum becomes obliterated by chronic inflammation. Then gas is produced from the organisms located within the cyst progressively distends and enlarges the diverticulum [6, 15, 16].

The ball valve theory is more widely accepted. Anatomic communication is demonstrable in over two-thirds of the cases, making it difficult to believe that gas formed by microorganisms in the cyst would not vent into the lumen [6, 15, 16].

The age in the present case is much younger than the usual age of occurrence of giant colonic diverticulum as reported in literature. This may probably be due a background of tuberculous pathology; which precipitated the formation of this mucosal herniation leading to pseudo-colonic diverticulum. Tuberculosis is a common disease in India and can occur at any age. The weakened muscularis mucosae as a result of inflammation may have resulted in this mucosal pouch which subsequently enlarged as a result of the collection from the tubercular etiology to such an extent that it masked the appendix which could not be identified at surgery leading to a bag of pseudo-diverticulum. The pseudo-diverticulum in the present case enlarged as a result of the accumulation of the inflammatory exudate/ caseous material leading to a bag of fluid instead of the gas filled pocket as has been postulated in other case in literature.

CONCLUSION

In conclusion, although GCD is rare, radiologists and surgeons should considerit in the differential diagnosis in any patient with acute abdominal pain and the finding of a large gas-filled/fluid filled structure in and around the colon. The presenting clinical symptoms are usually non-specific. Histopathological examination plays an important role in identifying the lesion.

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