CASE REPORT

Volvulus of caecum and ascending colon

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Abstract:
Caecal and ascending colon volvulus is an infrequently encountered condition and an uncommon cause on intestinal obstruction. Patient with this condition may present with highly variable clinical presentation ranging from intermittent, self limiting abdominal pain to acute abdominal pain associated with intestinal strangulation and sepsis. Lack of familiarity with this condition is a factor contributing to diagnostic and treatment delays. The objective of this presentation to promote clinicians awareness of this disease through patient case illustrations, discussion of disease pathogenesis, clinical features and management strategies.

Keywords: Volvulus of caecum, Ascending colon, malrotation, axial rotation, Caecopexy

Introduction:

Caecal and ascending colon volvulus is a very rare condition. In 1841 Rokistansky[1] report first case of this type. The earliest thorough consideration of this condition was presented by Von Zoege Manteuffel[2] in 1898.

Two types of caecal volvulus are described, axial rotation type and caecal bascule type . In practice, differentiation between the two types is not clinically important, because the clinical presentation and treatment is same. However the radiographic appearances are different which should be known to help in diagnosis. Early recognition and treatment is important to reduce the morbidity and mortality. The diagnosis is mostly based on plain abdominal radiograph findings aided by those of single contrast barium enema examination. C.T Scanning is useful in identifying signs of ischemia, which include mural thickening, infilteration of mesenteric fat and pneumatosis intestinalis.

Treatment is surgical, but reduction of the volvulus has been reported after barium enema examination.[3,4]

Case Report

Fourty two years old male patient presented with sudden onset of severe abdominal pain with vomiting, abdominal distention and constipation for few hours. The pain was colicky and very severe, only relieved temporarily by injection pethidine. His complete blood count showed a white cell count of 6.8 x 109. His liver function tests and serum amylase were within normal limit. Plain x-ray abdomen showed a dilated bowel loop in the right iliac fossa with a large air fluid level as shown in figure 1. Ultrasound abdomen consistent with dilated bowel loops and gastrograffin enema suggestive of cut off sign in the region of caecum and ascending colon (bird beak sign) as shown in figure 2.

Urgent Laparotomy was carried out showing partial mal-rotation of gut with volvulus of caecum and ascending colon which was twisted to 360 degrees clockwise as shown in figures 3 and 4. The caecum and ascending colon was markedly distended with toxic fluid and gases which were sucked by passing nasogastric tube through appendicular stump, (Figure 5,6,7) after de-twisting volvulus. Cecopexy by stitching caecum to lateral parietal peritoneum was performed. Patient had smooth uneventful recov-

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ery and went home on fifth post operative day.

Discussion:

Actually the term caecal volvulus is a misnomer because, in most patients, with caecal volvulus ascending colon is also involved . In general, partial malrotation of gut is necessary for caecal and ascending colon volvulus to occur. Volvulus is characterized anatomically by the axial twisting involving the caecum, terminal ileum, and ascending colon[5,6]. Caecal bascule is a variant of this condition associated with the upward and anterior folding of the ascending colon as diagramatically represented in figure 8 and this accounts for about 10% of all cases of caecal volvulus[6,7]. Although anatomically distinct, caecal volvulus and caecal bascule share many similar clinical features, including potential for intestinal obstruction and strangulation.[8,9] Volvulus of the caeco-colon usually occurs in the prescence of a defect in development, namely, a congenitally long mesentery of the caecum produced by an abnormal rotation of the caecum from left to right[10]. Wolfer et al describe the defective peritoneal fixation of the ascending colon and cecum in 10% of population[11]. Depending upon the length of the mobile ascending colon, a variety of obstructive bowel patterns may result. Many authors have described an association with adhesions, membranes, and bands which may provide a nodal point around which ascending colon may twist. Although these conditions are frequently present, they are not essential for a volvulus to occur.[12]

The disease is more common in third and forth decade of life. In our case it was found in 5th decade of life, the sex ratio is approximately three males to one female. The greater relative frequency of volvulus in males may be due to the fact that males are more exposed to violent muscular effort. Over eating and dietary indiscretion especially when followed by exercise may precipitate an attack of volvulus in predisposed individuals. Corner and Sargent[13] pointed out that drastic purgation may cause an attack of volvulus. Volvulus of caecum complicating labor has been reported by Basden[14].

John and Giudici presented one case and studied the literature and collected 10 cases of volvulus of the right half of the colon complicating pregnancy.[15]

The torsion usually occurs in clockwise manner, the explanation by Vonzoege Manteuffel being the peculiar mesenteric attachment of Ilium. Philipulicz[16] found volvulus to occur counter clockwise in only two out of 24 cases where as Weible[17] reported it clockwise in 30 out of 37 cases.

Homan mentions the rapid gas formation in the involved portion of intestine which does not develop else where to the same degree. This observation was also noted in our case, there was development of enormously distended caecum and ascending colon in short period of time. One must consider the mechanism of the diffusion of blood gases into the intestinal lumen through the mucosa. The gases which are responsible for gaseous distention are carbon dioxide, hydrogen sulphide, oxygen, hydrogen, methane and nitrogen. The oxygen is reabsorbed and replaced by carbon dioxide making an ideal culture medium for the anaerobic organisms normally found in the colon. Anaerobic infections very frequently complicate surgery of the colon. Patients may give history of abortive attacks of volvulus, prior to admission for operation.

The patterns of clinical presentation are broadly categorized as, recurrent intermittent, acute obstruction and acute fulminent.[18]

Recurrent intermittent pattern also called as mobile caecum syndrome[19,20]. This clinical presentation has been reported to occur in nearly 50% of patients before the onset of acute volvulus.[21]Typically , the patient have recurrent symptoms consisting of generalized or localized right lower quadrant pain, abdominal distention followed by relief of pain with evacuation of copious amount of foul smelling stool and gas.

Acute obstructive pattern when there are symptoms and signs of acute intestinal obstruction and if patient not treated at this point progres-

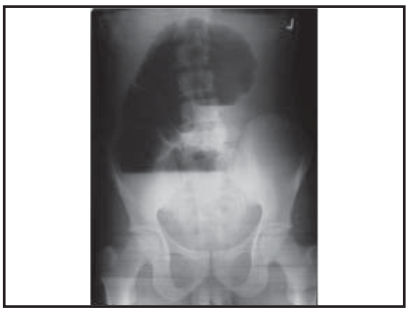

Figure 1: *X-ray abdomen showing a large air fluid level in the right upper quadrant*

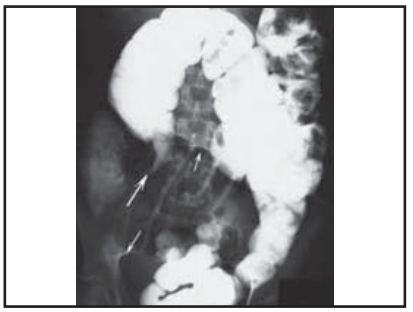

Figure 2: *Bird beak sign in barium anema*

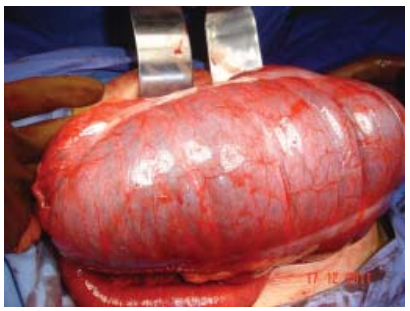

Figure 3: *The large volvulus of caecum and ascending colon visualized at laparotomy*

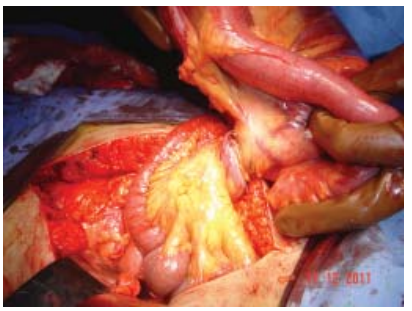

Figure 4: *The twist of the volvulus at its mesentry*

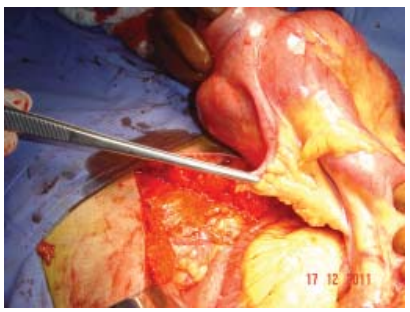

Figure 5: *Appendix can be easily seen*

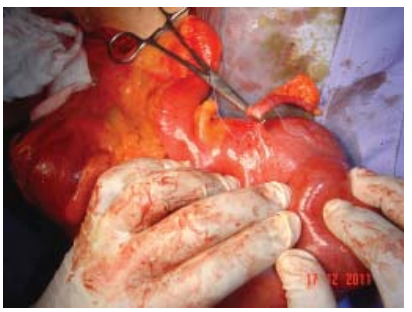

Figure 6: *Appendecectomy done*

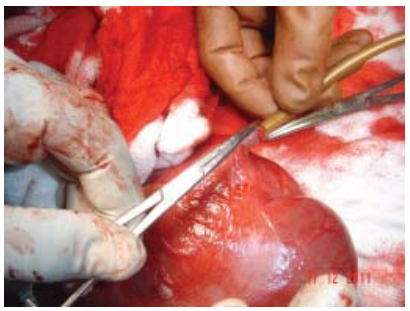

Figure 7: *The stump of appendix used to deflate the large volvulus of caecum and secending colon*

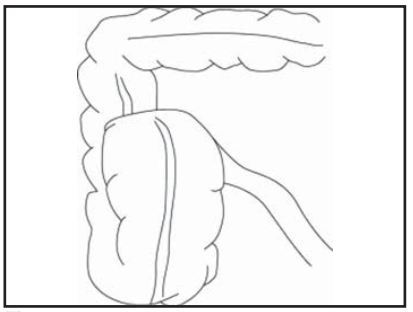

Figure 8: *Diagramatic representation of bascule type of caecal volvulus*

sion to acute fulminent pattern when there are symptoms and signs of gangrene and perforation.

Blood chemistry neither sensitive nor specific for diagnosis of caecal volvulus, may show raised serum urea and decrease in serum potassium.

In plain X-ray films of abdomen common abnormalities visible are ,Caecal dilatation (98% -100%), single air-fluid level (72% - 88%), dilated small bowel loops (42% - 55%), absence of gas in distal colon (82%).[22]

Barium enema having the diagnostic accuracy of 88% in acute caecal volvulus.[1]

Occasional successful volvulus reduction has been reported after barium enema administration.[23] The "beak sign" or a smooth tapering cut off at the efferent limb of obstruction is the most common confirmatory finding visualized during barium enema.[24]

Abdominal C.T is now replacing barium enema as the preferred imaging modality for the diagnosis of acute cecal volvulus. The "coffee bean sign", the "bird beak sign" and "whirl sign" are three common C.T findings associated with acute cecal volvulus.[25] Addition to these signs, visualization of gas filled appendix has been described as a finding associated with cecal dilatation from cecal volvulus.[26]

Colonoscopy is generally not recommended in the initial treatment of cecal volvulus.[8] due to risk of colonic perforation and potential delay in operative treatment associated with unsuccessful reduction.

Treatment options are

1. Untwisting of the volvulus ,if gut is viable, with the separation of adhesive bands and a plastic (fixing) procedure, caecostomy or/ and caecopexy to avoid recurrence.
2. Resection and anastomosis of the involved portion of gut.

The simplest method of course is untwisting the obstructed loops and Caecopexy with suture of the untwisted caecum to the lateral parietal peritoneum sometimes becomes the operation of choice

Conclusion:

Caecal and ascending colon volvulus is a rare condition. It is predisposed by excess caecal mobility which is often associated with con-

comitant mal rotation of bowel. Early diagnosis and prompt treatment is essential to reduce the high mortality rate, reported with this condition which is essentially a closed loop obstruction that rapidly lead to vascular compromise with consequent gangrene and perforation.

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