Case Report

Caecal volvulus: report of two cases

Abdulhadi Mohamed Elbashir, CMD*, Sami Ismael Ahmed CMD**, Elhadi Yuosif MSc***
Consultant Surgeon, Najran University, KSA*, Anatomist, Najran University**, Consultant Surgeon, Singa Hospital, Sudan***

Abstract
Colonic volvulus is a condition in which part of the colon twist around its axis. We reported here two different types of caecal volvulus, the first an 18 yrs old male who was diagnosed as recurrent appendicitis and at laparotomy had a caecal volvulus with a long mesentry. Laparotomy derotation and caecopexy was done. The second patient, a 32 years old female who was diagnosed with small bowel intestinal obstruction. At laparotomy, she had caecal volvulus due to arrested gut malrotation. She underwent right hemicolectomy. Both had uneventful recovery and were asymptomatic 3 years later.

Introduction
Colonic volvulus is a condition in which part of the colon twist around its axis, being enabled by a large, mobile segment of the colon with a small mesenteric fixation. Caecal volvulus is the second most common type of colonic volvulus after sigmoid volvulus(1), accounting for 10-40% of colonic volvulus. Patients with caecal volvulus may present with highly variable clinical presentations. Lack of familiarity of this condition is a factor contributing to diagnostic and treatment delays(2). We report two cases one had a caecum with long mesentry and the other with situs inversus abdominis.

Keywords: Colon, caecum, volvulus, acute abdomen

Case-1: Caecum with long mesentery:
An 18 years old male presented with severe colicky abdominal pain maximum at the right iliac fossa. The condition recurred many times over a year. He was seen by many doctors for his recurring abdominal pain. At this presentation, the condition was...
more florid; pain was more severe than in the previous attacks. The condition was associated with vomiting and mild abdominal distension. On examination, the patient was ill, in pain but afebrile. His pulse was 90 beats/min and blood pressure was 120/80 mmHg. Abdominal examination showed mild tenderness at the right iliac fossa. There was distension and tympanic resonance at the right iliac fossa. Bowel sound was exaggerated. A diagnosis of recurrent appendicitis was considered. At laparotomy the caecum was viable, with a long mesentry (Fig.1), distended, oedematous and partially twisted. It was untwisted and an appendicectomy was done. In Figure 2, followed by caecopexy to the parietal peritoneum. The patient was followed for three years with no recurrence.

Case-2: Arrested gut malrotation:
A 32 years old lady presented with severe colicky abdominal pain, distension, vomiting and absolute constipation. She had many attacks of abdominal colic over the last few months that resolved spontaneously. She was seen by several doctors, many X-rays and ultrasound scans were performed, but no solid diagnosis was reached. On examination, she was very ill, in pain and dehydrated. Her pulse was 100 beats per minute and her BP 100/50 mmHg. Abdominal examination showed grossly distended abdomen. There was tympanic resonance maximum at the left hypochondrium. Bowel sounds were exaggerated. Per rectal examination revealed an empty rectum. Haematological investigations were within normal. Biochemical investigations showed low potassium and sodium. X-ray abdomen showed multiple air fluid levels, consistent with small bowel obstruction. At laparotomy bowel loops were distended (Fig. 3).

The caecum was found twisted with ascending colon and ileum at fulcrum (Fig 4). The liver was on the left side (Fig. 5). A right hemicolecetomy was done (Fig. 6).
Case Report

Caecal volvulus Abdulhadi M Elbashir

Discussion

Developmental anatomy of the caecum:
The caecum is the last part of the gut to re-enter the abdominal cavity. Temporarily, it lies in the upper right quadrant directly below the right loop of the liver. From here it descends into the right iliac fossa. Normally, the ascending colon, except for its most caudal part (approximately 1 inch), fuses to the posterior abdominal wall. Persistence of a portion of the mesocolon gives rise to a mobile caecum. People with incomplete intestinal rotation generally develop inadequate right colon fixation associated with potential for caecal volvulus formation.

Based on reports from necropsy reviews, abnormal caecal mobility was found in 11% - 25% of adults. Caecal volvulus is characterized anatomically by axial twisting that occurs involving the caecum, terminal ileum and ascending colon. Caecal bascule is a variant of this condition associated with the upward and anterior folding of the ascending colon and accounts for 10% of all caecal volvulus cases.

Although anatomically distinct, caecal volvulus and caecal bascule share many similar clinical features including the potential for intestinal obstruction and strangulation. Reports from both Japanese and Western literature gave the same incidence of 2.8 to 7.1 per million people per year and the average age of 53 years. The average age in India was 33 years.

There are three clinical syndromes associated with abnormal caecal mobility. The first is a mobile caecum syndrome in which there is chronic intermittent abdominal pain with spontaneous resolution after the passage of flatus. Physical examination may show mild right sided abdominal tenderness or no abnormality. This presentation may be an identifiable predecessor in 50% of patients presenting with acute volvulus. Our two reported cases had similar previous attacks.

There was no postoperative complication and three years later she was asymptomatic.
Case Report
Caecal volvulus Abdulhadi M Elbashir

The second is the acute obstruction in which there is cramping abdominal pain and vomiting that do not resolve spontaneously. On examination, there is abdominal tenderness with or without a palpable abdominal mass, and high pitched bowel sounds\(^{(2,7,8)}\). The third is the acute fulminant type where patients have toxic appearance and peritonitis. Patients with this presentation frequently have bowel necrosis. The condition may present in hospitalized patients for other illness and hence pose a diagnostic difficulty\(^{(2)}\).

It has been reported that radiological abnormalities are identifiable in nearly all patients with acute caecal volvulus, with caecal dilatation in 98%-100%, single air fluid level in 72%-88%, small bowel dilatation in 42%-55% and absence of gas in the distal colon in 82% of patients\(^{(3,9)}\). However, given the non-specific nature of these radiological findings and the unusual occurrence of caecal volvulus, many of these patients are erroneously given the diagnosis of small bowel obstruction\(^{(2,10)}\).

No radiology was done in our first patient as the diagnosis of appendicitis was considered, while in the second case, an abdominal x-ray showed multiple air fluid levels and small bowel obstruction diagnosis was entertained\(^{(2)}\). Barium enema has been the imaging modality traditionally applied for caecal volvulus confirmation, with diagnostic accuracy of 88% for acute volvulus. Furthermore, occasional successful volvulus reduction has been reported\(^{(9)}\). There are many radiological signs that aid in the diagnosis of caecal volvulus e.g. beak sign or smooth tapering cut-off at the efferent limb which is the most common diagnostic finding in barium enema. Coffee bean sign is seen in computerized-tomography scan. As C.T scan is becoming more popular method of investigation in acute abdomen, caecal volvulus case especially when it is associated with malrotation can be picked better\(^{(11)}\).

Operative management for caecal volvulus ranges from caecopexy, caecostomy to resection which might be limited or extensive, according to the bowel viability. Caecostomy is no longer used because of higher rate of complications. Resection surgery has a lower recurrence rate. We did appendicectomy and caecostomy in the first patient based on intraoperative findings, we felt it was satisfactory. Cecopexy was mentioned as a relatively safe procedure but with higher recurrence rate. In the second patient, despite of viable bowel we did resection and anastomosis because of the long mobile segment of the ascending colon. Hemi-colectomy is the treatment of choice in both viable and non viable bowel\(^{(1,5,11)}\). In both patients, we did not have recurrence for three years follow up.

Caecal volvulus is not an uncommon condition. The diagnosis needs high index of clinical suspicion, radiological imaging and CT scanning. Delay in the diagnosis can lead to drastic complications. Caecal volvulus and gut malrotation should be remembered as a clinical problem. The condition may be associated with situs inversus abdominis. Resection in a form of hemi-colectomy is the treatment of choice.

References:
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