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Original Research Article

Jejunal obstruction due to ischemic stricture: an unusual presentation

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ABSTRACT

Background: The most common causes of mechanical small bowel obstruction are postoperative adhesions and hernias. Other etiologies of small bowel obstruction include, diseases intrinsic to the wall of the small intestine, like tumors, strictures, intramural hematoma and processes that cause intraluminal obstruction like intussusception, gallstones, foreign bodies etc. Ischaemic enteritis is a rare etiology, reported only in about 0.1% of cases. Ischaemic strictures of the small bowel are a result of decreased blood supply to the small intestine. They require surgical intervention for their management.
Methods: Author presented a 40 year-old diabetic female who presented with upper GI obstruction of 2month duration. Her history of illnesses included stroke, myocardial infarction and a transient episode of intestinal obstruction occurring simultaneously 3years ago. On investigations, she was found to have an occlusive distal jejunal stricture. Author studied the literature for the various management options and selected the most appropriate one for her.
Results: Exploratory laparotomy with resection and end to end anastomosis of the jejunal segment was done. The histopathology of the segment revealed ischaemic enteritis with large vessel blockade causing stricture. The patient had an uneventful post op recovery and is asymptomatic two months since.
Conclusions: Ischaemic enteritis results in small intestinal obstruction due to intestinal stenosis in its chronic phase. Diagnostic delay is due to the differential diagnoses and missing out on the transient phase of early ischemia.

Keywords: Jejunal stricture, Ischaemic enteritis, Small bowel obstruction

INTRODUCTION

The most common causes of mechanical small bowel obstruction are postoperative adhesions and hernias.[1,2] Other etiologies of small bowel obstruction include diseases intrinsic to the wall of the small intestine, like tumors, strictures, intramural hematoma and processes that cause intraluminal obstruction like intussusception, gallstones, foreign bodies etc.[3,4] Ischaemic enteritis is a rare etiology, reported only in about 0.1% of cases.[5] Ischaemic strictures of the small bowel are a result of decreased blood supply to the small intestine. They require surgical intervention for their management.[6] A 40-year-old diabetic female presented with complaints of pain abdomen for past two months and bilious vomiting which was progressive till she could not even retain fluids. Pain was colicky in nature and was relieved after vomiting which occurred half to one-hour post-meals. There was no history of obstipation, melaena or hematochezia, nor loss of appetite or weight. She gave history of a single episode of both stroke and myocardial infarction 3 years back. Simultaneously she also had transient acute abdominal pain, vomiting and distension abdomen with obstipation which resolved spontaneously. On abdominal palpation, minimal tenderness over the upper abdomen with distended upper bowel loops was felt. She had no history of tuberculosis or any previous surgeries. Her family history was inconclusive.

METHODS

In view of chronic abdominal pain, patient underwent a series of investigations for the cause. All routine investigations were normal. CECT Abdomen showed a short segment, circumferential wall thickening in the distal jejunum causing luminal narrowing with dilatation of proximal small bowel loops (Figure 1).

Figure 1: Dilated proximal bowel.

Figure 2: Distal jejunal stricture.

Minimal surrounding fat stranding was also noted around involved jejunal segment with few sub-centimetric enhancing mesenteric lymph nodes. Radiological diagnosis was of an inflammatory jejunal stricture (Figure 2). The chest X-ray and other investigations, however, were not suggestive of any inflammatory pathology.

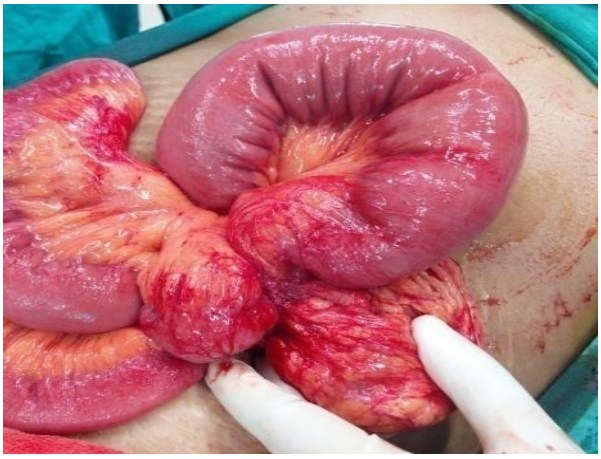

Figure 3: Stricture in the jejunum.

Figure 4: Excised jejunal specimen with stricture.

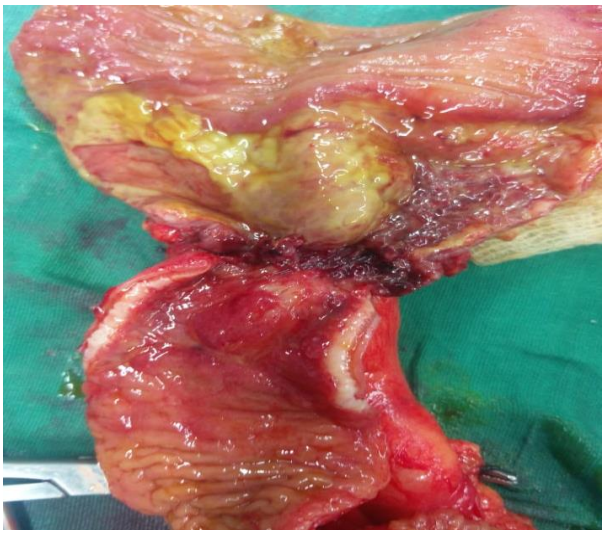

Figure 5: Cut section of specimen showing stricture.

The patient was prepared for exploratory laparotomy. She was taken up for exploratory laparotomy which revealed, a single stricture 2cm in length at the distal jejunum around 40cm from duodeno-jejunal junction with proximal dilated and thickened bowel loops and adherent omentum at the strictured segment (Figure 3). There were mesenteric lymph nodes locally, which were resected along with a margin of mesentery (Figure 4). The stricture segment was resected out followed by an end to end jejuno-jejunal anastomosis (Figure 5).

RESULTS

The Algorithm author followed in the treatment protocol consists of initial phase of detection of the existing pathology. Like in this case the first manifestation of early ischaemia in the form of transient episode of acute obstruction which resolved spontaneously was missed. Later, when it presented as full-fledged stenotic form with progressively increasing obstruction it was evaluated extensively and surgery planned. Evaluation includes contrast enhanced CT scan, CT angiography, endoscopic evaluation and enteroclysis. Very often, like in present case the nature of obstruction as ischaemic may still be delusive. The drawback being an attempt at endoscopic management taking it to be of inflammatory origin would not succeed. Present case had clear history of vascular episode along with a transient episode and hence possibility of ischaemic stricture was kept at the outset itself. Moreover, she was a case of seriously impaired lumen and exploration was mandatory. A resection and anastomosis of the affected jejunal stricture was done and author got a supportive diagnosis on histopathology as well.

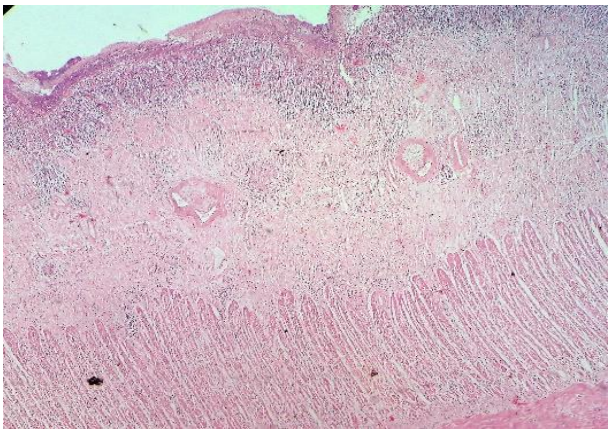

Figure 6: Ulceration of surface mucosa covered by inflammatory exudates, the sub-mucosa shows fibrosis, two vessels showing reduction in lumen and young fibro-intimal plaque formation (H&E, X50).

The postoperative period was uneventful. Histopathology report showed sub-mucosal infarction with stricture formation. Representative sections examined showed ulcerated mucosal lining covered with necrotic slough and inflammatory exudates along with occasional giant cells. The wall showed chronic inflammatory cell infiltrate. There were arterial blockades seen with re-canalization. Lymph nodes isolated showed reactive lymphoid hyperplasia (Figure 6). Section from the mesentery showed a large vessel with organizing thrombus and re-canalization (Figure 7).

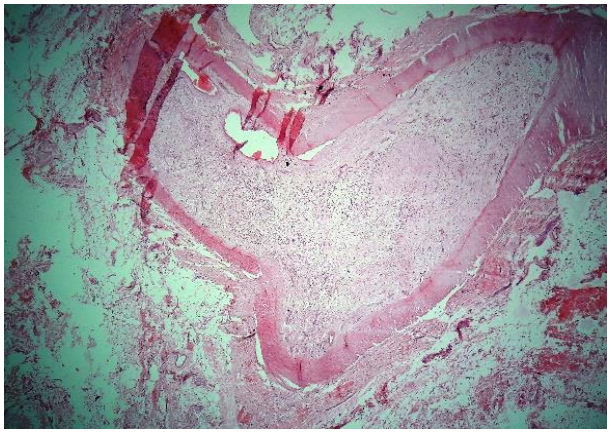

Figure 7: Photo-micrograph showing a large vessel with luminal thrombosis and re-canalization of the thrombus. (H&E; X 20).

The rare diagnosis of ischaemic jejunal stricture required proper evaluation of the patient from history findings, features of obstruction as well as investigative modalities used to evaluate her.

DISCUSSION

Most common causes of small bowel obstruction are postoperative adhesions and hernias.[1] Other etiologies include diseases intrinsic to the wall of the small intestine like benign and malignant strictures, and processes that cause intra-luminal obstruction like intussusception, gallstones and foreign bodies. In a patient with no history of previous surgery, obstructing hernia or metastatic disease, in India where tuberculosis is endemic, intestinal tuberculosis is the most common cause of small bowel stricture formation.[2] Idiopathic strictures also form a large category. [3,4]

Raf LE reported only 11 cases (0.1%) of ischemic stenosis of the small intestine among 9,536 patients undergoing surgical resection of small intestine.[5] Indian literature however, reports mesenteric arterial thrombosis to be common between 20 and 40years of age, accounting for 3-5% of small bowel strictures.[3,4] Takeuchi N et al, evaluated 33 cases from 26 reports and found, 23 patients (69.7%) were male and 10 patients (30.3%) were female, with a mean age of 61.9years.[6] Naba K reported 15 cases (45.4%) had cardiovascular disease and 7 cases (21.2%) had arrhythmia. Four cases (12.1%) were determined to have no underlying disease.[6] Most ischaemic enteritis cases are accompanied with hypertension, diabetes mellitus, ischaemic heart disease and cerebral infarction, thus, ischaemic enteritis has associated atherosclerosis.[7]

A case series by Sada M et al, indicated that 46.4% of patients with stenotic ischaemic enteritis had an underlying disease, including hypertension, ischemic heart disease, arrhythmia, cerebral infarction or diabetes.[8] This case series suggested ischaemic enteritis to be more common in elderly people with thrombotic conditions, although there were some cases seen in younger patients without underlying disease.[8-10]

Ischemic enteritis occurs when arterial inflow to the small intestine is reduced.[11] The frequency of ischaemic enteritis is much lower than that of ischemic colitis and there are no established clinical or pathologic diagnostic criteria for this.[11] It is a rare disease with an unfavorable clinical outcome due to its irreversible pathophysiology and patients eventually require surgical treatment.[11] Ischaemic enteritis is classified into two types: stenotic and transient.[7,12] The transient type usually goes unnoticed because it resolves in a few days. This was what happened to the patient while she was suffering an episode of stroke and myocardial infarction and it was overlooked due to the transient and self-limiting course. She presented with the stenotic type of manifestation much later.

Koshikawa Y et al, strongly recommend use of enteroscopy to evaluate the stenosis.[6] Author did a CT scan and as the patient was not tolerating even liquids, decision was made in favor of exploration. The macroscopic characteristics of ischaemic enteritis are: afferent loop dilatation, circumferential stenosis with thickening of the intestinal wall. The histological characteristics of ischaemic enteritis include variable ulcer depth with base lined with vessel-rich granulation tissue. Severe fibrosis is seen within the sub mucosal layers and severe inflammatory cell invasion (primarily lymphocytes and plasma cells) with hemosiderin-laden macrophages scattered throughout the entire thickness of the intestine.[6] This case was consistent with ischaemic enteritis both macroscopically and microscopically.

The management of intestinal strictures is either in emergency situation or when the patients are being worked up for chronic abdominal pain. In emergency the final diagnosis is on exploration either laparoscopically or by open technique. In chronic cases there is time to evaluate patients with double contrast CT scans, enteroclysis and endoscopy. Management accordingly falls into three categories: medical management with steroids and anti-inflammatory agents is indicated in inflammatory strictures like Crohn's, tuberculosis etc., endoscopic surgery with either knife or balloon to open up the stricture which is useful in patients having benign strictures due to inflammatory pathology, radiation, post-surgical strictures etc.[13,14] They are however fraught with complications like bleeding and perforation and surgical options are stricturoplasty and resection anastomosis of the affected segment of intestine. For benign strictures less than 2cm in length and having partial occlusion stricturoplasty is the preferred method. For longer segment and totally occlusive benign strictures resection and anastomosis is the preferred modality.[15] For malignant strictures on the other hand safe radical resection taking adequate tumor free margin along with lymph-nodal clearance where feasible is advocated. Ischaemic strictures could have variable etiology, irrespective of which a resection and anastomosis with healthy edges is the preferred treatment of choice as is advocated by Koshikawa Y et al, the reason being the strictured segment is a compromised segment and is usually dependent on omental blood supply for its viability.[6] Lesser procedures like endoscopic techniques and stricturoplasty have shown poor results.

The patient had a very short segment involvement but had significantly compromised lumen and underwent resection anastomosis with very good outcome.

CONCLUSION

Ischaemic enteritis results in small intestinal obstruction due to intestinal stenosis in its chronic phase. Diagnostic delay is due to the differential diagnoses and missing out on the transient phase of early ischemia. Co-morbid conditions are suggestive of the diagnosis irrespective of age. Therefore, a diagnosis of ischaemic enteritis ought to be kept in mind and surgical treatment be kept as the intervention of choice.

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