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Case Report

Multiple jejunal diverticulitis presenting with acute intestinal obstruction: a diagnostic dilemma

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ABSTRACT

Acquired and congenital diverticula of the jejunum in the adult are unusual entity. Most of them being pulsion diverticulum are mostly the result of intestinal dyskinesia. These lesions are usually asymptomatic and may produce chronic symptoms and an acute complication in a patient. It is because of the rarity of the entity that they often produce a diagnostic as well as therapeutic dilemma resulting in unnecessary morbidity and mortality. These diverticula should not always be dismissed as incidental for they may be the underlying cause of some vague symptomatology. Complications arising from these lesions are rare but do definitely occur. Optimal treatment of these lesions requires an understanding of their anatomy and the disease process they produce. We report a case of multiple jejunal diverticulitis in a 40 year old patient presenting with acute abdomen and discuss the clinical as well as diagnostic aspects along with a management algorithm in such patients.

Keywords: Jejunal diverticulum, Diverticulitis, Small bowel diverticuli, Pulsion Diverticulum

INTRODUCTION

Jejunal diverticuli are a rare entity and occur in approximately 0.3 % - 1.3 % of the world population. [1] They are a diagnostic headache as well as a therapeutic challenge to surgeons throughout the world. These diverticuli mostly multiple in the jejunum and solitary distally and are characteristically found in 60 or 70 year old males. Such condition may be suspected in patients with unexplained GI bleeding, unexplained intestinal obstruction and chronic abdominal pain. The diagnosis may be confirmed with contrast studies of the small intestine, arteriography, or nuclear scan. Though may be incidentally detected many a times, these may be the cause some of some longstanding vague symptomatology given by the patient. Asymptomatic jejunal diverticulosis does not require intestinal resection. Exploratory laparotomy and resection of affected intestinal segment with primary anastomosis is mandatory in case of perforation, abscesses and obstruction. The extent of the segmental resection depends on the length of the bowel affected by diverticula.

CASE REPORT

A 40 year old male presented to our emergency with complaints of intense abdominal pain and episodes of vomiting since last 48 hours. There was associated low grade intermittent fever since last 3 days. He also mentioned a history of chronic abdominal discomfort or pain, fullness and often abdominal distension for which he was treated by some local physician with conservative methods. Patient was febrile and his physical examination revealed a distended abdomen, no palpable mass per abdomen and mild diffuse tenderness with hyperperistaltic bowel sounds. Per rectal examination was normal. Abnormal laboratory findings included elevated leukocyte count (14500 cells /cumm),

hypokalemia (3.0mmol/l) and hypoalbunemia (2.7mmol/l). Plain radiograph of the abdomen showed multiple air fluid levels and dilated jejunal loops suggesting intestinal obstruction but there were no signs of perforation. Abdominal ultrasonography revealed dilated and hyperactive intestinal loops but not free intraperitoneal fluid. With the patient in acute intestinal obstruction he was given nasogastric tube and received intravenously fluids and parenteral nutrition and was taken up for emergency surgery. Exploratory laparotomy revealed the obstruction due to multiple overloaded jejunal diverticula on the mesenteric border. The affected segment of the jejunum about 30 cms was located around 60 cms from the DJ flexure and was resected and end to end anastomoses were done. The above intraoperative findings were highly suggestive that the mechanical obstruction was caused by adhesions and stenosis due to the diverticulitis. The patient had a uneventful post-operative period and was discharged on the 14th post-operative day. He was followed after 1 month and he was healthy with no post-operative discomfort or complains. Histopathology of the specimen also confirmed them to being jejunal diverticula with features of inflammation.

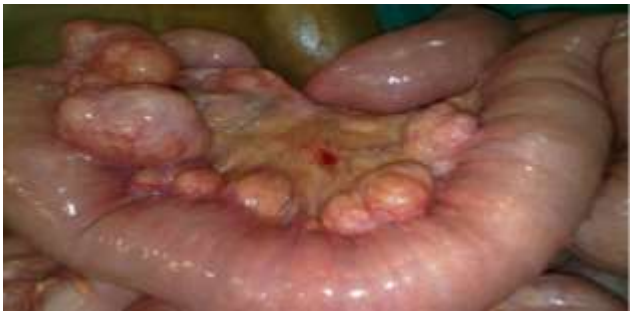

Figure 1: Intraoperative pic showing multiple jejunal diverticuli.

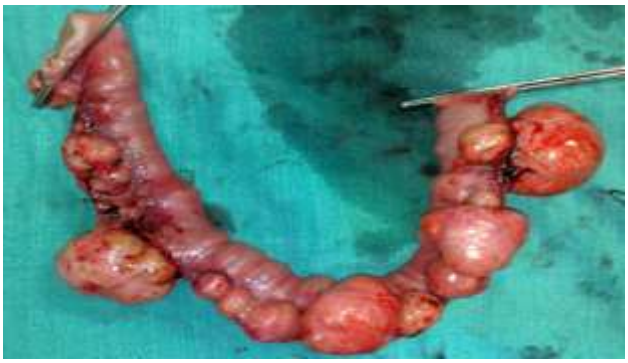

Figure 2: Resected bowel segment with the diverticuli.

DISCUSSION

Small bowel diverticula were first described by Soemmering and Baillie.[2] The first instance of jejunal diverticulosis was reported by Sir Astley Cooper.[3] Gordinier and Sampson published the first account of an operation for small bowel diverticula.[2,3] Jejunoileal Diverticulum apart from meckels represent the rarest form of GI diverticular disease. These diverticuli are mostly multiple with the number decreasing as we travel distally. Most frequently seen in the sixth or seventh decade of life and have a male predilection.

These diverticulae are characterized by herniation of mucosa and submucosa through the muscular layer at the point where blood vessels penetrate the intestinal wall (false diverticula).[4,5] This explains their typical location at the mesenteric side.[1,4,6] Diverticula are more frequent in jejunum (61%) than the other parts of the small bowel and it is attributed to the greater diameter of the penetrating jejunal artery.[5] Coexistent diverticuli are found in many other digestive localization. Isolated jejunal diverticulosis coexists with diverticula of the esophagous (2%), of the duonenum (26%) and of the colon (35%).[7] The prevalence increases with the age and the disease presents a peak incidence at the sixth and seventh decades with a male predominance.[8] The size of small bowel diverticula varies. Diverticula may measure from few millimeters up to more than 3 cm.

Peristalitic abnormalities, intestinal dyskinesias and high segmental intraluminal pressures are believed to result in such pathology though the exact etiology is still unclear.The current hypothesis focuses on abnormalities in the smooth muscles or mynteric plexus. Careful microscopic evaluation of jejunal specimens with diverticula has shown that these abnormalities are of three types:

1. Fibrosis and decreased numbers of normal muscle cells consistent with progressive systemic sclerosis.
2. Fibrosis and degenerated smooth muscle cells suggestive of viscersl myopathy.
3. Neuronal and axonal degeneration indicative of visceral neuropathy.

Any of these abnormalities could lead to distorted smooth muscle contractions of the affected small bowel generating increased intraluminal pressure. Consequently mucosa and submucosa would pass through the weakest mesenteric site in the bowel wall with penetration induced by paired blood vessels from the mesentery. Jejunal diverticulosis and rare neuromuscular disorders such as Cronkhite-Canada syndrome, Fabry's disease.[9,10] and mitochondrial neurogastrointestinal encephalomyopathy.[11] have been linked to each other. Diffuse gastrointestinal giant diverticulosis with perforation and malabsorpion associated with giant jejunal diverticula in Elhers-Danlos syndrome have also been reported.[12,13] Progressive systemic sclerosis often involves the gastrointestinal tract and constitutes a characteristic example of proven dysmotility and acquired origin of the jejunoileal diverticulosis.

Manometric studies, performed in patients with the disease, demonstrated intestinal dysmotility in 88% of the cases examined.[14] Weston et al reported an important incidence of small bowel dilation and diverticula (42%) in patients with progressive systemic sclerosis.[15] A case of association between jejunal diverticulosis and

myasthenia gravis has been published in order to emphasize the possible correlation between anticholinesterase drugs and increased intraluminal pressure.[16] Primary or secondary amyloidosis is commonly associated with dysmotility disorders of the large and small bowel and cases of diverticular disease have been described.[17-19] Despite small bowel diverticulosis seems to be acquired, two cases of familiar predisposition have been reported.[20,21]

Complications such as obstruction, hemorrhage, diverticulitis and perforation occur in 10%-30% of the patients.[22,23] Some patient responds to the temporary interruption of the enteral nutrition, to a gastrointestinal relief with a nasogastric tube and to the administration of empirical wide spectrum antibiotics, however complications requiring surgical intervention occur in 8-30% of patients .[24,25] Incidence of diverticulitis with or without perforation ranges from 2% to 6%.[26] Perforation causes localized or diffuse peritonitis but symptoms are nonspecific to justify differential diagnosis, considering that other abdominal conditions present similar clinical aspects. Complications such as abdominal abscesses, fistulas and hepatic abscesses are possible.[27] 'Microperforations' of the diverticula causing chronic, repetitive and asymptomatic pneumoperitoneum have been reported.[28,29] Mechanical obstruction can be caused by adhesions or stenosis due to diverticulitis, intussusception at the site of the diverticulum and volvulus of the segment containing the diverticula. Sometimes calculi enclosed in the diverticula may apply pressure to the adjacent bowel wall or may escape from the diverticulum causing intestinal occlusion. Pseudoobstruction reported in 10-25% of cases, is usually associated with jejunal diverticulosis as a result of peritonitis , perforation, strangulation and incarceration of an enterolith within a diverticulum or related to the bacterial overgrowth and the visceral myopathy or neuropathy.[30] A wide overloaded with liquid diverticulum may function as a pivot causing volvulus.[31] Bleeding is a consequence of acute diverticulitis and due to the erosive results of the inflammation and results in almost 2% of the cases. Mucosal ulcerations compromise mesenteric vessels causing hemorrhage. Suspicion of jejunal diverticulosis is difficult and often the diagnosis is missed or delayed. Considering that jejunal diverticulusis is asymptomatic for a long time in most of the cases, diagnosis is usually made when the disease becomes symptomatic or complicated.

Nobles et al described a characteristic triad of jejunoileal diverticulosis (abdominal pain, anemia and segmental dilatation in the epigastrium or in the left upper abdomen) but still simple radiographs are not suggestive to make the diagnosis.[32] In cases of complicated jejunal diverticulosis, plain abdominal X-ray series demonstrate distension of small bowel, airfluid levels and pneumoperitoneum. Computed tomography may show focal areas of outpouching of the mesenteric side of the bowel, localized intestinal wall thickening due to inflammation or edema, abscesses, free abdominal fluids and pneumoperitoneum. Multi slice CT seems to be promising in diagnosing jejunoileal diverticula and appears more specific than enteroclysis concerning small bowel diseases.[33] Endoscopy does not identify diverticula but excludes other causes of obstruction or hemorrhage.

Laparoscopy becomes a valid diagnostic approach for complicated cases; it is rapidly convertible in laparotomy. In addition, laparoscopy, précising the area of the intestinal complication, guide the surgeon to the ideal incision site on the abdominal wall, minimizing the time of the operation, the postoperative pain and the morbidity due to a larger abdominal incision.[34] A symptomatic jejunoileal diverticulosis does not require intestinal resection.[24]

Exploratory laparotomy and resection of affected intestinal segment with primary anastomosis is mandatory in case of perforation, abscesses and obstruction. The extent of the segmental resection depends on the length of the bowel affected by diverticula. If diverticula involve a long intestinal segment, as commonly happens, the resection should be limited to the perforated or inflamed intestinal segment in order to avoid a short bowel syndrome. Other surgical approaches such as the invagination of the diverticula, the primary closure of the perforation and omental patch and the diverticulectomy should be avoided since they present high mortality rates.[35] One should also keep in mind that diverticula may recur in a patient undergone a segmental intestinal resection for diverticulosis since the mechanism of diverticula formation (neuropathy, myopathy etc.) still remains.

CONCLUSION

Although jejunal diverticular disease is difficult to suspect, it should be considered as a cause of acute abdominal pain. It is because of the rarity of the entity that they often come lower down in the list of differentials resulting in unnecessary morbidity and mortality. Complications arising from these lesions are rare but do definitely occur. A clearer understanding of their anatomy and the disease process they produce may help clinicians to suspect such pathologies and intervene early before they give rise to any complications.

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