DOI: 10.7860/JCDR/2015/11210.5541

Case Report

Pathology Section

Jejunal Diverticulosis with Perforation – A Challenging Differential Diagnosis of Acute Abdomen: Case Report

KIRUTHIGA NATARAJAN[1], MANJIRI PHANSALKAR[2], RENU G'BOY VARGHESE[3], G. THANGIAH[4]

ABSTRACT

Multiple diverticulosis of the jejunum represents a very rare entity. Jejunal diverticula are found to be the rarest of all small bowel diverticula. The disease is usually asymptomatic and often becomes clinically relevant when complicated. This rarity makes it a difficult differential diagnosis. Related complications such as diverticulitis, perforation, and bleeding and/or intestinal obstruction appear in about 10-30% of the patients which increase the morbidity and mortality rates in such individuals. Here, we present a case of jejunal diverticulosis with perforation who presented with symptoms of acute abdominal pain, vomiting and fever along with a brief review of literature.

Keywords: Abdominal pain, Diverticulitis, Intestinal perforation, Perforation

CASE REPORT

A 56-year-old male presented with dragging upper abdominal pain of one week duration. There was a history of dyspepsia, abdominal discomfort and vomiting after meals for past one week and low grade fever associated with chills and rigors.

On examination, the patient was febrile with a temperature of 99^0 F, pulse rate - 110/min, blood pressure - 130/90 mm Hg. Abdominal examination revealed generalized tenderness with fullness over the right hypochondrium.

Laboratory work up revealed Hb-13g/dl, TLC-10,000/cu.mm, DLC –P90 L7 E1 M2, urea - 49mg/dl, creatinine – 0.5mg/dl. Abdominal radiograph revealed air under the diaphragm. Abdominal CT scan and ultrasound showed multiple diverticuli in the small intestine [Table/Fig-1] and air under the diaphragm suggesting perforation.

Emergency midline laparotomy was performed. Intra-operatively multiple jejunal diverticuli were found on the mesenteric border. They were located between 8 cm to 20 cm from duodeno-jejunal (DJ) flexure. Serosal purulent exudates and multiple inter-loop adhesions were noted. There was purulent material in the peritoneum as well. Proximal jejunal resection with end to end anastomosis was done. The post operative period was uneventful and the patient was discharged on 10^{th} day after the surgery. One month follow up was uneventful.

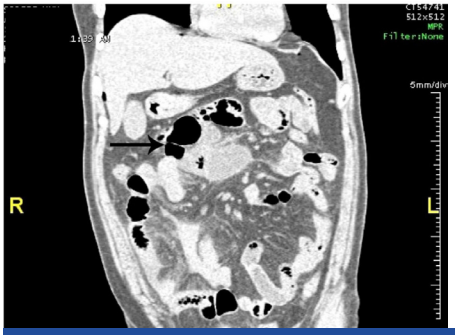
Gross examination of resected specimen revealed a segment of small bowel, 65 cm in length with eight outpouchings on the serosal aspect along the mesenteric border, of which largest measured 4x3x1 cm with focal areas of exudates on the serosal aspect and adhesions; smallest measured 2x1.5x0.5cm [Table/Fig-2]. Three diverticulae were perforated with overlying serosal exudates (Arrow). Proximal part of small intestinal loop was distended due to multiple fibrous adhesions between intestinal loops.

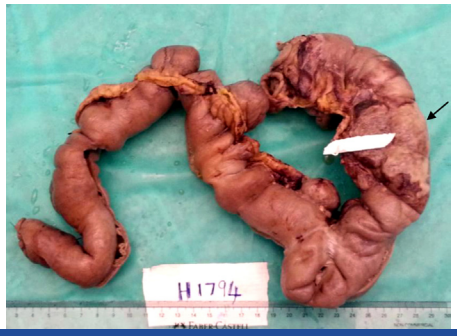
Microscopically, diverticulae had features of pseudo-diverticuli revealing outpouching of mucosa (Arrow) with muscularis mucosa through the muscle coat. Some of the diverticulae showed perforation with extensive fibrinopurulent exudate and congested vessels on serosal surface. There was no evidence of granulomatous or transmural inflammation in sections studied [Table/Fig-3].

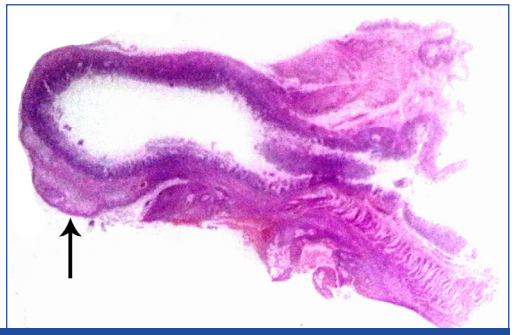
DISCUSSION

In 1794, Sommerings first described about jejunal diverticulosis followed by Astley Cooler in 1809. Diverticulosis is the condition in which there are outpouchings (diverticulae) of the intestinal mucosa and submucosa through the weakness of the muscle layers in the intestinal wall. The most common site is the colon followed by duodenum and rarely the jejunum [1,2].

There is a difference in quoted incidences of jejunal diverticulosis by radiological study and autopsy study. Small bowel contrast studies showed the incidence of 0.5-2.3%, while autopsy study showed incidence of 1.3 - 4.6% [1,2]. Overall incidence of colonic diverticulosis is much higher (15-40% in adults over 40 years) when compared to small bowel diverticulosis [3]. Colonic diverticular disease was considered to be mainly a disease of Western civilization being very uncommon in Afro-Asian countries. However, a study conducted at United States in New Jersey showed high prevalence of colonic diverticulosis in the Indian immigrants [4]. Regarding small bowel diverticulosis, in our literature search of Jejunal diverticulosis







[Table/Fig-1]: CT scan abdomen showing multiple jejunal diverticuli and the arrow indicates air/fluid within the diverticuli
[Table/Fig-2]: Resected segment of jejunum showing multiple diverticuli with focal exudate (Arrow)
[Table/Fig-3]: Whole Mount view showing outpouching of mucosa and submucosa through the muscle coat

in India, We have found seven cases of jejunal diverticulosis reported in India, five of them presented with complications like perforation, gastrointestinal bleeding and intestinal obstruction [3,5-10]. In this regard, a recent cadaveric study of duodenum conducted in South India showed the prevalence of 4.2% for duodenal diverticulosis [11]. Herewith, we are presenting a very rare case of Jejunal Diverticulosis with complication, noted at a tertiary care hospital in Southern India.

The aetiology of jejunal diverticulosis is unclear. They are acquired false diverticulae (pseudo-diverticuli) which arise due to outpouching of mucosa and muscularis mucosa through the muscle coat at the point where the mesenteric vessels penetrate intestinal wall. Most commonly they occur on the mesenteric side of the jejunum. It is frequently seen in elderly males [1]. In our case too, multiple diverticula were seen on the mesenteric side in an elderly individual.

Although the aetiology is unclear, several studies done earlier have mentioned the possible aetiologies of this pseudodiverticulae. Krishnamurthy et al., suggested that intestinal dyskinesia due to abnormality of smooth muscle or myenteric plexus results in diverticulae formation [12]. Kongara et al., thought that irregular intestinal contractions increased the intraluminal pressure resulting in diverticulae formation through the weakest point [13]. Falidas et al., [2], quoted that it is also found to be associated with systemic diseases like progressive systemic sclerosis and amyloidosis in which it is primarily due to intestinal dysmotility. Though it is defined as acquired false diverticula, familial predisposition has also been reported [2].

Jejunal diverticulosis is asymptomatic, unless there are complications. About 10-30% of patients develop complications like perforation, obstruction, hemorrhage and diverticulitis [2,3]. There are very few case reports in the literature of jejunal diverticulosis presenting with perforation [6,7,9,10] Our patient too remained asymptomatic, until he presented with acute abdomen because of perforated diverticuli.

As jejunal diverticulitis is often asymptomatic, they commonly present with diagnostic dilemma. As there is no reliable diagnostic test, it presents as a challenging disorder from a diagnostic perspective [14]. Moreover, their rare incidence with varied clinical presentation makes the diagnosis both delayed and difficult [1]. Investigation modalities like CT scan, single or double balloon enteroscopy are useful in diagnosing small bowel disorders [15]. But, they are expensive and cannot be used in an emergency setting [3,5,6]. However, abdominal and chest X-rays can demonstrate perforation. Luckily, for our patient, imaging studies suggested perforation preoperatively.

Studies should be done on the possible risk factors and patho-physiology of asymptomatic diverticulosis.

CONCLUSION

Jejunal diverticulosis should be considered as an important differential in elderly patients who present with acute abdominal pain. Jejunal diverticulae are rare and usually asymptomatic. They rarely present as acute abdomen with complication of perforation as in our case making it a challenging diagnosis.

REFERENCES

[1] Patel VA, Jefferis H, Spiegelberg B, Iqbal Q, Prabhudesai A, Harris S. Jejunal diverticulosis is not always a silent spectator. *World J Gastroenterol*. 2008;14(38): 5916-19.

[2] Falidas E , Machos K, Mathioulakis S, Archontovasilis F, Villias C. Multiple giant diverticula of the jejunum causing intestinal obstruction. *World J Emerg Surg*. 2011; 6(1):8.

[3] Agarwal R, Gupta M. Diverticulosis of Jejunum A rare cause of acute abdomen. *Journal of Case Reports*. 2013;3(1);15-18.

[4] Kastuar S,Narayanan S, Kastuar S, Pitchumoni CS. Prevalence and pattern of colonic diverticular disease in Asymptomatic indian immigrants in USA. *Practical Gastroenterology*. 2010;12-15.

[5] Singh O, Gupta SS, Shukla S, Mathur R K, Shukla S. Jejunal diverticulae. Reports of 2 cases with review of literature. *Ind J Surg*.2009;71(5):238-44.

[6] Murmur D. Perforated solitary Jejunal Diverticulum: A rare case report. *Int J Biol Med Res*.2012;3(2):1845-47.

[7] Singh S, Sandhu H P, Aggarwal V. Perforated Jejunal diverticulum.A rare complication. *Saudi J Gastroenterol*.2011;17(5):367.

[8] Badra RK, Sandhu NS. Jejunal diverticulosis with enterolith-presenting as acute intestinal obstruction. *Indian J Surg*.2005;67:219-21.

[9] Chauhan TS, Bhoriwal S, Singla SL, Tarar VK, Kumar R, Kala S. Perforated Jejunal diverticula. *Eur J Surg Sci*. 2013;4(2):72-75.

[10] Baksi A, Gupta S, KumarS,Ray U.Perforated isolated jejuna diverticulam-a rare case etiology of acute abdomen. *BMJ case Rep*. March 2011. doi:10.1136/bcr-2013-201533.

[11] Sakthivel S, Kannaiyan K, and Thiagarajan S. Prevalence of Duodenal Diverticulum in South Indians: A Cadaveric Study. *ISRN Anatomy*. vol. 2013, Article ID 767403, 5 pages, 2013. doi:10.5402/2013/767403.

[12] Krishnamurthy S, Kelly MM, Rohrmann CA, Schuffler MD. Jejunal diverticulosis. A heterogeneous disorder caused by a variety of abnormalities of smooth muscle or myenteric plexus. *Gastroenterol*ogy. 1983;85(3):538-47.

[13] Kongara KR, Soffer EE: Intestinal motility in small bowel diverticulosis: a case report and review of the literature. *J Clin Gastroenterol.* 2000;30(1):84-86.

[14] Salama AF, Belgrami F, Ellatif MA. Perforated solitary giant true jejunal diverticulam. *Saudi Surg J*. 2013;1:20-22.

[15] De Peuter B, Box I, Vanheste R, Dymarkowski S. Small bowel diverticulosis: Imaging findings and review of 3 cases. *Gastroenterol Res Pract*. 2009.Article id:549853.

PARTICULARS OF CONTRIBUTORS:

1. Post Graduate, Department of Pathology, Pondicherry Institute of Medical Sciences, Ganapathychettykulam, Puducherry, India.
2. Professor, Department of Pathology, Pondicherry Institute of Medical Sciences, Ganapathychettykulam, Puducherry, India.
3. Professor, Department of Pathology, Pondicherry Institute of Medical Sciences, Ganapathychettykulam, Puducherry, India.
4. Professor, Department of Surgery, Pondicherry Institute of Medical Sciences, Ganapathychettykulam, Puducherry, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Kiruthiga Natarajan,
Post Graduate, Department of Pathology, Pondicherry Institute of Medical Sciences,
Ganapathychettykulam, Puducherry- 605014, India.
E-mail: elankiru@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Sep 11, 2014**
Date of Peer Review: **Nov 17, 2014**
Date of Acceptance: **Dec 10, 2014**
Date of Publishing: **Feb 01, 2015**