DOI: 10.7860/JCDR/2014/8968.4723

Case Report

Radiology Section

Jejunal Diverticulitis Ascending to the Duodenum as a Rare Cause of Acute Abdomen

ROBERT FRESOW[1], HENDRYK VIEWEG[2], PETER KAMUSELLA[3], ROLAND TALANOW[4], REIMER ANDRESEN[5]

ABSTRACT

We present the case of a 73 year-old Caucasian male with acute abdominal pain, peritonism and vomiting. Due to the severity of symptoms a CT examination of the abdomen was performed. The scans revealed multiple jejunal diverticula, wall thickening of the duodenum and jejunum, and free peritoneal fluid. No clear signs of mesenteric infarction, free abdominal air or abscess formation were seen. An additional exploratory laparotomy was conducted to confirm the CT findings and rule out the need for resection of small bowel. Since the results were matching, conservative therapy was scheduled and the patient recovered well. Jejunal diverticulitis is a rare cause of acute abdomen, however has to be considered as a differential diagnosis to more common entities. It usually stays localized, while in our case the inflammation ascended to the duodenum. CT is the modality of choice to diagnose and rule out potentially life threatening complications.

Keywords: Acute abdomen, CT, Jejunal diverticulits

CASE REPORT

A 73 year-old man was admitted to our hospital with complaints of sudden onset of abdominal pain, nausea and vomiting. The pain was localized mainly in the upper left abdomen with clinical signs of peritonitis. During the time in the emergency department, the abdominal pain markedly worsened. On examination by the attending emergency physician, he responded adequately and was fully oriented. Blood pressure was 120/70 mm Hg, pulse was 110 beats per minute, body temperature was 36.9°C, respiratory rate was 18, and oxygen saturation was 97% with 4 liter oxygen via nasal cannula. The abdomen was rigid, with distension mainly in the upper left abdomen. Normal saline and morphine sulfate were administered intravenously. Blood levels of gamma-gt (102 U/l), lactatdehydrogenase (367 U/l), bilirubin (2.2 mg/dl), direct bilirubin (0.59 mg/dl), serum glucose (259 mg/dl), lactate (2.9 mmol/l) and leukocytes (32.000) were markedly elevated. The patient's medical history revealed coronary heart disease, insulin-dependent diabetes mellitus, hypertension, Barrett oesophagus, hiatus hernia, a post appendectomy status and a history of stroke. He had a smoking history of 20 pack-years, and occasional consumption of alcohol. The use of illicit drugs was denied, and he didn´t remember unusual ingestions.

A plain radiograph of the abdomen showed no evidence of free abdominal air, air-fluid levels or dilated intestinal loops.

Abdominal ultrasonography revealed thickened walls of small bowel loops with cockade signs and moderate ascites.

By reason of a lack of clear diagnosis and severe abdominal pain despite intravenously administered morphine, a CT-angiography of the abdomen was resolved.

The scans revealed thickened walls of the small bowel over a distance of approximately 16 cm, extending from the distal second part of the duodenum to the proximal jejunum. There were moderate amounts of perihepatic and perisplenic fluid. No free intraperitoneal air was found. The mesenteric vasculature was unremarkable. Multiple fluid filled diverticula measuring up to 3 cm in the longest diameter were found alongside the jejunal walls. Additionally there was surrounding fat stranding from the distal second part of the duodenum to the proximal jejunum [Table/Fig-1,2].

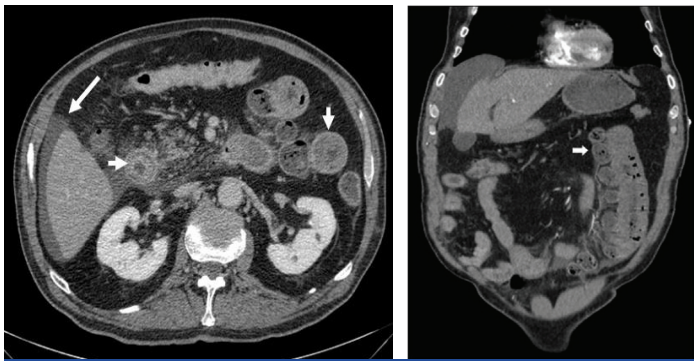
The findings were indicative of an exacerbation of chronic jejunal diverticulitis with acute diverticulitis of the proximal jejunum, ascending to the duodenum. Conservative antibiotic therapy was initiated but due to increasing pain in the night, an exploratory laparotomy was carried out on the next morning. Upon exploration 3 inflamed jejunal diverticula were detected in the area of the ligament of Treitz accompanied by moderate amounts of brownish non-foul smelling fluid and paralytic jejunal loops. The walls from the distal second part of the duodenum to the proximal jejunum appeared congested and inflamed. However, there were no signs of bowel ischemia, covered or open perforation. Four abdominal drains were inserted intraoperatively. The patient's postoperative course was uneventful with a 5 day course of antibiotics and transient parenteral feeding. He recovered well and was discharged 9 days after admission.

DISCUSSION

Colonic diverticulosis is a common problem affecting up to 40% of the people in industrial nations of over 40 years of age [1].

In contrary, the incidence of small-bowel diverticula is reported to be much lower at 0.02-3%, with an increasing prevalence in the elderly.

They are mostly acquired rather than congenital appearing on the mesenteric border because this is the area of the entrance of blood vessels into the bowel wall, which is not covered by peritoneum. Such an area makes the wall prone to diverticulum formation by herniation of the mucosa through the weak spots in the muscle layer



[Table/Fig-1]: Axial CT image shows free fluid (long arrow), jejunal diverticula,thickened walls of duodenal and jejunal loops and mesenteric fat stranding (both short arrows)
[Table/Fig-2]: Coronal CT image shows multiple jejunal diverticula (arrow)

[1]. Increased intraluminal pressure is crucial in the pathogenesis of diverticula. Complications arise most often in diverticula of the jejuno-ileal region, while in our case the pathology was in the proximal jejunum [2].

As with diverticulitis of the large intestine, perforation ileus, gastrointestinal hemorrhage and abscess formation are the main complications of jejunal diverticulitis [1], occurring in 6 -10% of cases.

Some diseases are associated with multiple small-bowel diverticula such as Fabry's disease, progressive systemic sclerosis, the Cronkhite-Canada syndrome, the syndrome of hereditary nerve deafness, progressive sensory neuropathy and neuromuscular disorders.

The symptoms of our patient were highly unspecific and can be seen in several more common causes of the acute abdomen like appendicitis and sigmoid diverticulitis. These unspecific symptoms seem to be typical for the disease according to comparable literature [3,4]. This can lead to a delayed diagnosis and therefore to a notably high mortality rate of up to 40% in patients with bowel perforation, especially in older patients [2,5]. Just as in colonic diverticulitis, jejunal diverticulitis is mostly focal, affecting one or a few contiguous diverticula. In our case laparotomy revealed 3 inflamed diverticula but in contrary to the available literature the acute intestinal inflammation spread significantly to the distal second part of the duodenum and to the following jejunal loops. This may be explained by the increased susceptibility of preexisting chronically inflamed intestinal walls, which are seen on the CT scans.

As described by several other authors, CT is the modality of choice to evaluate the characteristic signs of diverticulitis like intestinal wall thickening, localized perifocal fluids and mesenteric involvement [2, 6].

Due to increasing abdominal pain at night, our patient underwent exploratory laparotomy, which is the surgical approach of choice, providing diagnostic and therapeutic options [2]. The surgical findings were matching the radiological report of an uncomplicated diverticulitis without signs of the above mentioned main complications. Thus a thorough abdominal lavage and the insertion of abdominal drains were the only procedures carried out by the surgeons.This approach seemed appropriate to us and is supported by other cases of local and self-limited inflammation [2,7-9].

Facing complications in the exploration, a segmental intestinal resection of the affected segment with primary anastomosis is mostly recommended [2,3,5,8,10]. Nevertheless Singal et al., reported of a similar case with giant and multiple jejunal diverticula presenting as peritonitis and accompanied by a single perforation which was primarily closed leaving the diverticulum in situ [7]. Other authors favor a primary surgical intervention even when lacking complications noting that conservative management involving bowel rest and antibiotic administration is rarely successful [10].

In summary no established criteria for the management of jejunal diverticulitis are available [8], assumedly caused by the limited experience with this entity. We therefore intend to intensify knowledge about this rare disease by presenting clinical appearance and CT images of jejunal diverticulitis, which atypically ascended to the duodenum and was successfully treated by a conservative approach avoiding small bowel resection.

CONCLUSION

Patients suffering from jejunal diverticulitis exhibit highly unspecific symptoms of the acute abdomen. CT is the modality of choice to make the correct diagnosis and evaluate possible life threatening complications. Although unusual, the inflammation can spread to adjacent bowel parts, like in our case passing the ligament of Treitz to the duodenum. Conservative therapy avoiding intestinal resection is effective and less invasive if no complication occurs.

CONSENT

Written informed consent was obtained from the patient for publication of this report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

REFERENCES

[1] Schloericke E, Zimmermann MS, Hoffmann M, Kleemann M, Laubert T, Bruch H, et al. Complicated jejunal diverticulitis: A challenging diagnosis and difficult therapy. *Saudi J Gastroenterol.* 2012; 18: 122-28.

[2] Wojciech S, Michel C, Stefania P, Nicolas D. Acute ulcerative jejunal diverticulitis: Case report of an uncommon entitiy. *World J Gastroenterol*. 2008;14:6265-76.

[3] Kubota T. Perforated jejunal diverticulitis. *Am J Surg.* 2007;193:486-87.

[4] Dendl LM, Brost S, Schreyer AG. Seltene Ursache des akuten Abdomens: Jejunaldivertikulitis. *Fortschr Röntgenstr*. 2013;185:668-70.

[5] Mantas D, Kykalos S, Patsouras D, Kouraklis G. Small intestine diverticula: *Is there anything new? World J Gastrointest Sur*g. 2011; 3:49-53.

[6] Coulier B, Maldague P, Bourgeois A, Broze B. Diverticulitis of the small bowel: CT diagnosis. *Abdom Imaging.* 2007;32:228-32.

[7] Singal R, Gupta S, Airon A. Giant and multiple jejunal diverticula presenting as peritonitis a significant challenging disorder. *J Med Life.* 2012; 5:308-10.

[8] Singh O, Gupta SS, Shukla S, Mathur RK, Shukla S. Jejunaldiverticulae: reports of two cases with review of literature. *Indian J Surg.* 2009;71:238-44.

[9] Veen M, Hornstra BJ, Clemens CH, Stigter H, Vree R. Small bowel diverticulitis as a cause of acute abdomen. *Eur J Gastroenterol Hepatol.* 2009;21:123-25.

[10] Sakpal SV, Fried K, Chamberlain RS.Jejunal Diverticulitis: A Rare Case of Severe Peritonitis. *Case Rep Gastroenterol.* 2010;4:492-97.

PARTICULARS OF CONTRIBUTORS:

1. Faculty, Department of Radiology/Neuroradiology, Institute of Diagnostic and Interventional, Westküstenklinikum Heide, Academic Teaching Hospital of the Universities of Kiel, Lübeck and Hamburg, Germany.
2. Faculty, Department of Radiology/Neuroradiology, Asklepios Klinik Nord – Heidberg, Hamburg, Germany.
3. Institute of Diagnostic and Interventional Radiology/Neuroradiology, Westküstenklinikum Heide, Academic Teaching Hospital of the Universities of Kiel, Lübeck and Hamburg, Germany.
4. InnoMed, LLC, South Lake Tahoe, Stateline, USA.
5. Faculty, Department of Radiology/Neuroradiology, Institute of Diagnostic and Interventional Westküstenklinikum Heide, Academic Teaching Hospital of the Universities of Kiel, Lübeck and Hamburg, Germany.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Hendryk Vieweg,
Wollgrasweg 2, 23863 Kayhude, Germany.
E-mail : hendryk.vieweg@googlemail.com

FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Feb 28, 2014**
Date of Peer Review: **Apr 25, 2014**
Date of Acceptance: **Jun 06, 2014**
Date of Publishing: **Aug 20, 2014**