

MASSIVE BLEEDING IN SMALL BOWEL DIVERTICULOSIS

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ABSTRACT

INTRODUCTION: Diagnosis of small bowel diverticulosis complications is difficult in the emergency setting and often delays surgical management. The aim of this study was to report our experience with three patients presenting with surgical complication of small bowel diverticulosis with massive bleeding.

PATIENTS AND METHODS: From January 2015 to February 2017, three patients, two males and one female, presenting with bleeding as a complication of small bowel diverticulosis were included in this study. Their mean age was 70 years.

RESULTS: The mean duration between the complication onset and its management was 8.3 days. Gastroendoscopy and colonoscopy were used to eliminate stomach and colon bleeding. All the patients were operated on. Segmental small bowel resection was performed with primary anastomosis without any complications.

CONCLUSION: Small bowel diverticulosis is a rare pathology. In cases of gastrointestinal hemorrhage, diagnosis is performed by eliminating the bleeding from gastroduodenal and colonic segment of the gastrointestinal tract. The diagnosis has been established through exploratory laparotomy only. *Scr Sci Med* 2017; 49(3): 40-44

Keywords: jejunal diverticulosis, bleeding

INTRODUCTION

Intestinal tract diverticulosis is a rare disease. According to autopsy protocols, its incidence rate ranges from 0.1 to 2.7% (1). The disease occurs asymptotically and clinical symptoms occur in case of complications such as perforation, intestinal obstruction and intestinal hemorrhage manifested by melena and hematemesis.

While in perforation and intestinal obstruction urgent laparotomy rapidly establishes the diagnosis, in cases of bleeding the diagnosis is difficult and untimely. Subsequently, delayed diagnosis results in delayed surgical treatment.

The purpose of this article is to share the diagnostic problems and surgical treatment in our patients who have been hospitalized in the emergency division when diagnosed with melena and hematemesis.

PATIENTS AND METHODS

During the period from 2015 to 2017, 156 patients were admitted to the Division of Emergency Surgery of St. Marina University Hospital of Varna with a diagnosis of melaena and hematemesis verified by standard gastroduodenoscopy and colonoscopy. In three of these patients (in 1.92% of the cases), the repeated endoscopy failed to establish the source of bleeding. The bleeding reiterated many times and

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led to a breakdown in hemodynamic and hematological indicators, thus requiring a second gastroscopy with a negative result. Only the small bowel tract was left unexamined. Profuse bleeding required surgical treatment with the assumption that the source of bleeding was in the small intestine.

RESULTS

Preoperative patients' characteristics are shown on Table 1.

In these three patients, jejunal diverticulosis with a length of 60-70 cm was intraoperatively found out at a distance of 15-20 cm from the duodeno-jejunal transition (Fig. 1). A pronounced inflammatory reaction of the diverticula was observed macroscopically in one patient. It was localized at the highest point and adhered to the transverse colon. In the remaining two patients, the diverticulosis site was loose in the abdominal cavity.

From the beginning of the polyposis segment,

Table 1. Preoperative patients' characteristics

Patient No	Age (years)	Clinical features	Hb	Er	Ht	Endoscopy	Blood transfusion/days	Preoperative stay/days
1.	77	melena	88	2.6	0.28	GDS - neg. CS - neg.	276 mL	9
2.	69	melena, hematemesis	78	2.3	0.29	GDS - neg. CS - neg.	1209 mL	2
3.	64	melena, collapse	50	1.3	0.14	GDS - neg. CS - diverticulosis, no bleeding	1798 mL	9

legend: GDS - Gastroduodenoscopy, CS - colonoscopy

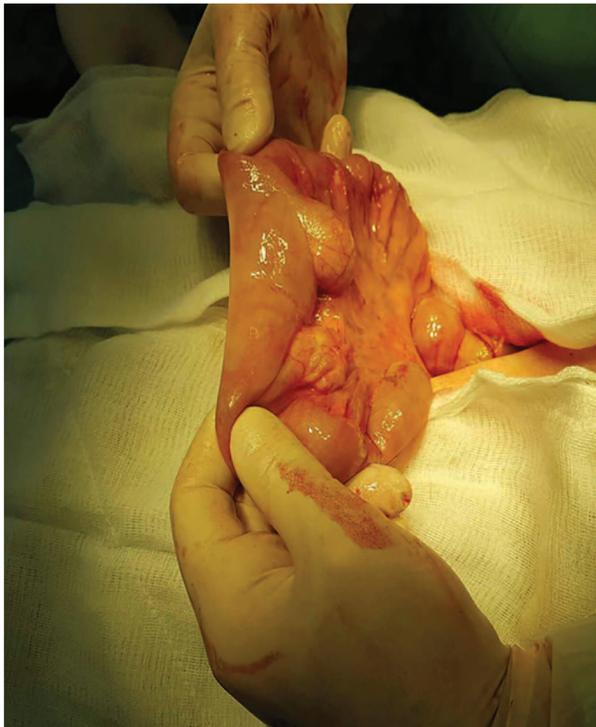


Fig. 1. Macroscopic appearance of the jejunal diverticulosis

the intestinal lumen was filled with blood that did not require intraoperative endoscopy. Resection of the polyposis segment with subsequent termino-terminal anastomosis was performed (Table 2).

There were no complications during the post-operative period. The patients were discharged with stable hematological and hemodynamic parameters (Table 2). Pathohistological studies showed a pronounced inflammatory reaction in the first patient (Table 2). In all three patients, there was no muscular tunic. Protraction of mucosa and submucosa through the muscle layer was present (Fig. 2).

Venous and arterial vessels were blood-filled and presented with a thinned wall (Fig. 3). Lymphocyte and leukocyte infiltration was observed around the vessels (Fig. 4).

Micrograph of diverticulosis demonstrated many blood vessels located between the mucosa and muscular tunic presenting with tortuous contours. There was increased arterial wall thickening. The inflammatory infiltration in this area had partially destroyed the vascular wall. Surrounding connect-

Table 2. Surgical and pathohistological features

Patient No	Operative finding	Surgery	Pathohistology
1	Jejunal diverticulosis at 30 cm from the duodeno-jejunal transition. Expressed inflammatory reaction with diverticulum adhered to the transverse colon	Resection of the diverticular segment	Stagnation in the bloodstream of the wall. Thinned vessel wall along with leukocyte and lymphocyte infiltration
2	Jejunal diverticulosis at 20 cm from the duodeno-jejunal transition. No inflammatory reaction	Resection of the diverticular segment	Stagnation in the bloodstream of the wall. Thinned vessel wall along with leukocyte and lymphocyte infiltration
3	Jejunal diverticulosis at 20 cm from the duodeno-jejunal transition. No inflammatory reaction	Resection of the diverticular segment	Stagnation in the bloodstream of the wall. Thinned vessel wall along with leukocyte and lymphocyte infiltration



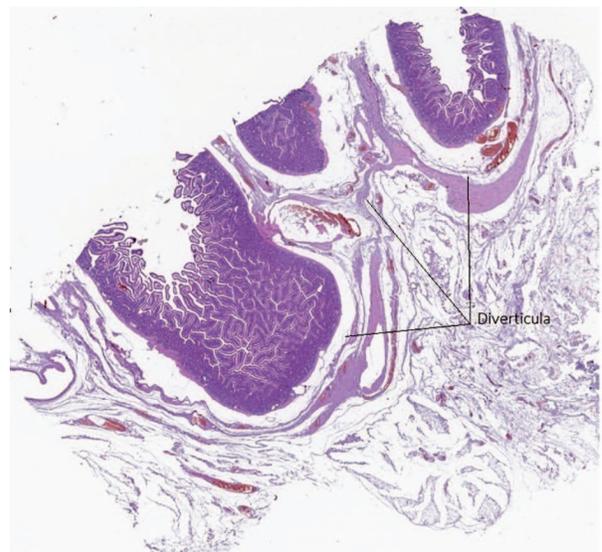
The small bowel diverticula with mucosal and submucosal protrusion through points of weakness in the muscularis propria; HE stain.

Fig. 2. Protraction of mucosa and submucosa through the muscle layer

ing tissues demonstrated evidence of vascular congestion and infiltration by lymphocytes, eosinophils and neutrophils.

DISCUSSION

Small bowel polyposis was described for the first time by Sumaring in 1794, and a more detailed description was made by Sir Asteli in 1807. It is classified as false diverticulosis because it lacks a muscle layer. In this case, the mucosa and the submucosal layer pass through the muscle layer in the form of a sac (2). Usually, the polyposis is multiple and localized in the small intestine. The diverticula are located in the mesenteric part of the intestinal wall, where mesenteric vessels enter, too (3).



Photomicrograph (original magnification, x400; HE stain) represents the small bowel affected by multiple diverticula. Note typical herniation of the intestinal mucosa and submucosa through residual bundles of muscularis mucosae. All the diverticula show chronic diverticulosis.

Fig. 3. Photomicrograph of blood-filled venous and arterial vessels

Clinically, diverticulosis occurs asymptotically and its clinical manifestation occurs in case of complications such as perforation (4), intestinal obstruction (5), and bleeding (6). The bleeding may occur as occult bleeding or in the form of massive melena and hematemesis (7) leading to a breakdown of hematological indicators. According to Pras, the bleeding rate ranges between 6% and 20% (cited after 8). The bleeding in the small intestine can be ob-

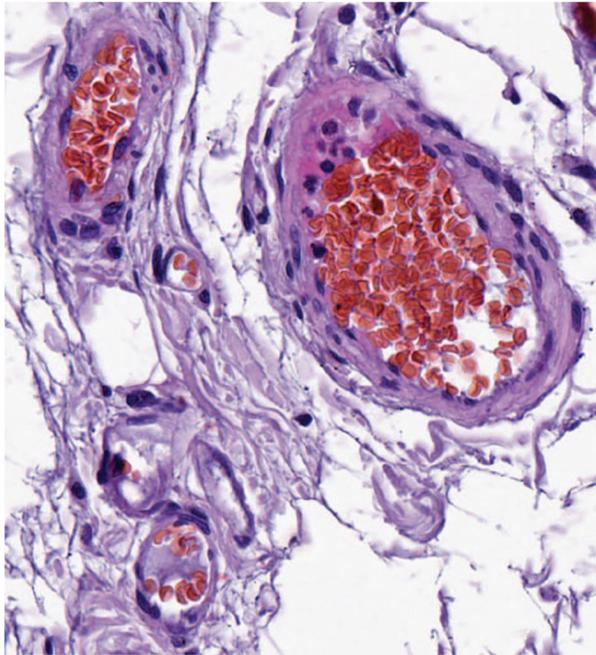


Fig. 4. Perivascular lymphocyte and leukocyte infiltration

served in angiodysplasia (9) or in primary and metastatic tumours located in other organs (1).

Endoscopy for gastrointestinal tract imaging is a basic method for recognizing the problems in the intestinal tract. However, it is extremely difficult in the small intestine and requires special endoscopic equipment (7,10) as well as a specialized endoscopic team. These preconditions are available in the most technologically advanced hospitals in our country only. The use of such equipment, usually in an emergency setting, is difficult to apply due to time deficiency. This applies to angioscopic and scintigraphic methods (10). In these cases, clinical assessment by means of urgent laparotomy remains at surgeon's disposal only. Intraoperative endoscopy is applicable here despite the risk of abdominal cavity contamination (3). In this case, when blood is present in the diverticulous segment, as in our patients, segmental resection with subsequent primary anastomosis can be performed. A segmental small bowel resection is successfully carried out in six patients presenting with a complication of small-bowel diverticulosis (11).

Morphologically, small bowel diverticulum is a sac-shaped mucosal and submucosal protrusion through the muscle layer. Mucosal ulcerations (10) can be observed, too. The changes are mainly in the vascular structure and expressed as blood-filling,

folding and possible rupture of arterial vessels (8). The arterial wall is thinner and there is an increased infiltration by lymphocytes and leukocytes around the vessels.

We find out ulceration in one of our patients only. According to Kamura, if there is no ulceration, a blood vessel rupture can occur (cited after 8). The structural changes in the wall of the diverticula and the increased intraluminal pressure are the probable cause of the rupture (8).

CONCLUSION

In patients admitted with massive melaena and hematemesis, if the bleeding source is not established through gastroduodenoscopy and colonoscopy, it should be assumed that it is located in the small intestinal tract. When fine-grain polyposis is detected, surgeon's behaviour should consist in resection of the polyposis site with primary anastomosis.

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