Proximal Jejunal Diverticle: Cause of Upper Gastrointestinal Bleeding

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ABSTRACT

Five percents of patient presenting with gastrointestinal (GI) bleeding, the etiology of bleeding could not be found by upper endoscopy and colonoscopy. Almost 75% of which, the abnormality is detected in small bowel. One of the etiologies in small bowel bleeding is jejunal diverticle. In this paper, we reported a female, 38 years old, came with upper GI bleeding since one month ago. She had undergone several diagnostic procedures, such as abdominal ultrasound, abdominal computed tomography scan (CT-scan), upper and lower endoscopy, but there were no conclusion to explain the cause of bleeding. However, barium follow through examination found a diverticle, pouch-like shape, at jejunal proximal projection. Then, she underwent surgical treatment.

Small intestine bleeding is best investigated by capsule endoscopy and double balloon enteroscopy. However, in limited conditions, small bowel follow through can be used to screen the source of bleeding in small intestine. The specific diagnosis of small intestine diverticle is possible by radiologic contrast study using various form of barium. Small bowel diverticle does not require surgical treatment, unless refractory symptoms or complications occur. Jejunal diverticle is one of sources in small intestinal bleeding. Small bowel follow through can still be used to diagnose jejunal diverticle.

Keywords: *diverticle, proximal jejunal, upper gastrointestinal bleeding, barium follow through*

ABSTRAK

Sejumlah lima persen pasien dengan perdarahan gastrointestinal tidak dapat ditemukan etiologinya setelah dilakukan prosedur pemeriksaan endoskopi atas dan kolonoskopi. Hampir 75% kelainan ditemukan pada usus halus, dengan salah satu etiologinya adalah divertikulum yeyenum. Pada kasus ini dilaporkan seorang pasien perempuan berusia 38 tahun dengan keluhan perdarahan saluran cerna bagian atas. Beberapa pemeriksaan diagnostik telah dijalani seperti ultrasound abdomen, CT-scan abdomen, endoskopi atas dan bawah namun sumber perdarahan masih tidak dapat ditemukan. Namun pada pemeriksaan barium kontras usus halus ditemukan divertikulum seperti kantong di daerah proksimal yeyenum. Pasien kemudian menjalani prosedur pembedahan.

Perdarahan usus halus paling baik ditelusuri dengan kapsul endoskopi dan enteroskopi dua balon. Pada fasilitas yang terbatas, barium kontras usus halus dapat digunakan untuk menapis sumber perdarahan dari usus halus. Diagnosis spesifik divertikulum usus halus mungkin dengan studi kontras radiologi menggunakan berbagai bentuk barium. Divertikulum usus halus tidak memerlukan tindakan bedah bila gejala tidak menetap atau terjadi komplikasi. Divertikulum yeyenum adalah salah satu sumber perdarahan usus halus. Barium kontras usus halus tetap dapat digunakan untuk diagnosis divertikulum yeyenum.

Kata kunci*: divertikulum, yeyenum proksimal, perdarahan gastrointestinal atas, barium kontras usus halus*

INTRODUCTION

Small-bowel diverticulosis is an uncommon, acquired condition that is sporadically observed during conventional small-bowel barium follow-through studies. While frequently seen in duodenum, jejunal and ileal localizations are very rare. Unlike colonic diverticula, symptoms occur rarely. Besides, the clinical significance of uncomplicated diverticula is minimal. Nevertheless, these small mucosal herniations may cause occult upper gastrointestinal bleeding.[1]

In five percents of patient presenting with gastrointestinal (GI) bleeding, the etiology of bleeding could not be found by upper endoscopy and colonoscopy. The other 75% patients, the bleeding source was found in the small bowel. The etiology of small intestine bleeding depends on the age of the patient.[2] Younger patients are likely to have small intestinal tumors, Meckel's diverticulum, Dieulafoy's lesion, and Chron's disease, while older patients are prone to bleeding from vascular lesions (up to 40% of all causes), and non-steroidal anti inflammatory drugs (NSAIDs) induced small bowel disease. The prevalence of small intestinal diverticula on autopsy ranges from 0.06 to 1.3%. This prevalence increases with age, peaking at sixth and seventh decades. Eighty percent of diverticula occur in the jejunum, 15% in the ileum, and 5% in both.[2] Usually, the disorder is clinically silent until it presents with complications. If symptomatic, the clinical presentations of acquired jejunoileal diverticulosis are vague and diverse. As a result, identification of the disorder can be quite difficult. Common acute complications of jejunoileal diverticulosis include diverticulitis, bleeding, perforation and intestinal obstruction.[2,3]

Small bowel examination can be performed with a number of radiologic and endoscopic modalities. Radiographic techniques include: barium studies, nuclear studies, computed tomography (CT) and magnetic resonance imaging (MRI) with enteroclysis, and angiography. Endoscopic techniques include cable endoscopy techniques, such as repetition of standard endoscopy, consist of esophago-gastroduodenoscopy (EGD), colonoscopy, push enteroscopy (PE), double balloon enteroscopy (DBE), and capsule endoscopy (CE). Surgical procedures include exploratory laparotomy with and without intraoperative enteroscopy.[4] In this report, we presented a case of GI bleeding caused by a proximal jejunal diverticle and how the diagnostic approach was made.

CASE ILLUSTRATION

A female, 38-year-old, came with chief complain of weakness since two weeks before admission. She was referred from Tangerang Hospital with upper GI bleeding and anemia for further examination. One month before admission her stool was black like asphalt once a day, soft, not hard or watery. She also felt abdominal pain and weakness. There was no palpitation, fever, nausea or vomit. She lost her appetite, but there was no decrease in body weight. She denied other bleeding manifestations, such as nose bleed, gum bleed, or bruised with unknown cause. After that, she went to Tangerang Hospital and got blood transfusion, after being discharged from the hospital, her stool was not black anymore. Two weeks before admission, she again complained about black stool. The weakness worsened, so she could not do daily activity as a house wife. She went to Tangerang Hospital again and got blood transfusion. She also underwent several diagnostic procedures such as abdominal ultrasound, abdominal CT-scan, and upper endoscopy, however the results were inconclusive. Later, she was referred to Cipto Mangunkusumo Hospital for further examinations.

There was no history of liver disease, lung disease, diabetes mellitus, heart disease, allergy, or tumor in this patient. She has uncontrolled hypertension. She denied history of taking pain reliever pills or herbal medicine, having tattoo or multiple sex partners, drinking alcohol, transfusion before, or using intravenous drugs. There is no family history of liver disease, lung disease, diabetes mellitus, heart disease, allergy, or adverse drug reaction before. Her mother has history of tumor on her leg.

On physical examination she looked moderately ill, compos mentis, with body mass index of 42.2 kg/m^2. Her blood pressure was high (140/90 mmHg), heart rate was normal and regular (96 beats/minute), normal respiratory rate (16 times/minute), and afebrile. There was no petechie, hematoma, spider nevi, or venectation, and no pale conjunctiva or jaundice sclera. No epistaxis, gum swell or gum bleed. Neck examination revealed normal jugular venous pressure and no sign of node enlargement. Lung and heart examination showed normal results. There was also no abnormalities on abdominal examination, liver and spleen were not palpable, and no tenderness. Extremities were warm and edema was not found on leg palpation. Rectal touché examination revealed that the anal sphincter was normal, ampula was not collapse, mucosa was smooth, no mass, and from the gloves, fecal was brown in color without blood.

Laboratory findings from Tangerang Hospital was hypochromic microcytic anemia with hemoglobin (Hb) 5.6 g/dL, hematocrite (Ht) 18%, leukocytosis with white blood cell (WBC) 15,000/µL, normal coagulation parameter, normal albumin and globulin levels, and negative hepatitis B surface antigen and hepatitis C virus. Urine analysis result was normal. Results of fecal analysis were black color stool with RBC 6-8/HPF, and the benzidine test was positive. At Cipto Mangunkusumo Hospital, the laboratory findings were Hb 10.6 g/dL, Ht 33%, WBC 7,200/µL, platelet 347,000/µL, mean corpuscular volume 76 fL, mean corpuscular hemoglobin 24 pg, mean corpuscular hemoglobin concentration 32 g/dL, aspartate transaminase (AST) 27 u/L, alanine aminotransferase (ALT) 10 u/L, creatinine 0.6 mg/dL, blood glucose 76 mg/dL, sodium 139 mEq/L, potassium 4.6 mEq/L, and chlorine 108 mEq/L.

Abdominal ultrasound revealed the presence of fatty liver, cholelithiasis, slight splenomegaly. However, there were no signs of chronic liver disease. Gastroduodenoscopy results were esophagitis, esophagus polyposis, and gastritis. Colonoscopy results showed that there were bleeding in the small intestine, chronic ileitis terminalis, and internal hemorrhoid grade II. Abdominal CT-scan revealed presence of cholelithiasis and mass in duodenojejunal with circumferential wall and barium contrast with air in it (Figure 1). Chest X-ray was normal. Electrocardiography result was ischemia on the anterior wall.

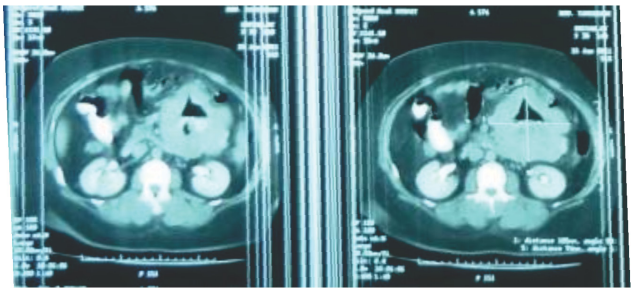

Figure 1. Abdominal CT scan revealed mass at duodenojejunal with circumferential wall and barium contrast with air in it

Based on those findings above, the initial problems in this patient were melena with history of hematemesis, anemia with inconclusive cause, mass at duodenojejenum, hypertension grade I, coronary artery disease on anterior wall, chronic cholelithiasis, and obesity. Initial management was soft rice diet for stomach 2,100 kkal with low salt, balance/24 hours, omeprazole tablet 40 mg twice daily, sucralfat 15 cc orally four times daily, cefotaxime 1 g intravenously three times daily, captopril 12.5 mg orally twice daily. On third day of admission, repeated colonoscopy and EGD were done and the results were no source of bleeding explaining the etiology of upper gastrointestinal bleeding.

This patient was then suggested to undergo enteroscopy in order to seek the etiology of bleeding from intestine origin. Because of financial problem, she was planned to undergo barium follow through examination. The result was a diverticle pouch-like shape at jejunal proximal projection (Figure 2). She underwent surgical treatment. One week after the surgery she was discharged and did not complaint like before.

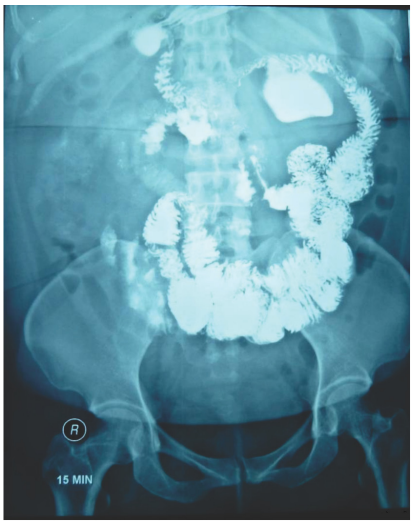

Figure 2. Barium meal follow through revealed a diverticle pouch-like shape at jejunal proximal projection

DISCUSSION

Small bowel diverticula are a clinical entity with special features and, usually remain silent. The site of protrusion is that of the entry points of the bowel vascular supply through the mesentery. This anatomical predilection often makes them difficult to detect as they are located in the mesenteric leaves. In some cases, the incoming vessel runs over the diverticulum dome. This close relationship is responsible for the complication of hemorrhage resulting from diverticula. Diverticulosis of the jejunal and ileum is an uncommon entity, with a reported prevalence on conventional barium studies of 0.3–1.9% and on autopsy of 0.3–1.3%. They are most common in the duodenum with a frequency of approximately 5%. They are less common in the ileum. The highest incidence of jejunal diverticula is in the elderly occurring during sixth and seventh decades of life.[5]

Mantas et al, analyzed 77 cases of diverticula located in the duodenum, jejunum and ileum that came to their hospital, evaluated the symptoms, established diagnostic approach and offered treatment. The signs and symptoms of bleeding were found in 8 cases. The distribution of incidentally discovered diverticula, jejenum diverticle was only found in 2 cases. Those findings revealed that jejunal diverticle was rare from other small bowel diverticula and the clinical manifestations were bleeding.[6] Bleeding is a consequence of acute diverticulitis and appears due to erosion in inflamed diverticle. Mucosal ulcerations compromise mesenteric vessels causing hemorrhage. Rodriguez et al, in a large series of 141 symptomatic cases, estimated bleeding in 2%.[5]

Hemorrhage as a presenting symptom occurs in 3.4-8.1% of patients with jejunal diverticle. There have been less than 60 case reports in English describing massive hemorrhage from jejunal diverticula. Unfortunately, neither the history nor the physical examination is helpful in diagnosing jejunal diverticula. These patients often experience acute massive bleeding per rectum and most patients have had no previous gastrointestinal symptoms.[7]

Our patient was 38 years old female came with repeated upper gastrointestinal bleeding with inconclusive etiology of the bleeding. She had undergone several examinations, such as upper endoscopy and colonoscopy. As we know, there are some areas in duodenum, jejunum, and ileum that could not be reached by upper endoscopy and colonoscopy. In the last few years those some areas can be reached by several new examinations, such as capsule endoscopy, push enteroscopy, and double balloon enteroscopy. Beside endoscopy examination, there are some modalities to reach small intestine like barium follow through and CT enterography.[8] There some limitations from capsule endoscope which can't do some intervetion procedure, beside also the problem of cost. Until now push enteroscopy and double balloon enteroscopy are not available in our country yet. We chose barium follow through examination that was available and suitable for our patient.

Suspicion of jejunal diverticulosis is difficult and often the diagnosis is missed or delayed. Considering that jejunal diverticulosis is asymptomatic for a long time in most of the cases, diagnosis is usually made when the disease becomes symptomatic or complicated. Simple radiographs are not suggestive in confirming the diagnosis despite the fact that some author described triad characteristic of clinical and radiographic findings of jejunoileal diverticulosis (abdominal pain, anemia and segmental dilatation in the epigastrium or in the left upper abdomen). In cases of complicated jejunal diverticulosis, plain abdominal X-ray series demonstrate small bowel distention, air-fluid levels and pneumoperitoneum. Barium follow-through study and enteroclysis are more specific although their utility is limited in emergency conditions. Computed tomography may show focal areas of out-pouchingmesenteric 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.[8-11] Endoscopy does not identify diverticula but excludes other causes of obstruction or hemorrhage.

She underwent barium meal follow through and the result was a pouchlike shape diverticulum at jejunal proximal projection. Abdominal CT-scan procedure revealed mass at duodenojejunal with circumferential wall and barium contrast with air in it. She was diagnosed as having jejenum diverticle that was concluded as the source of upper gastrointestinal bleeding.

Asymptomatic jejunoileal diverticulosis does not require intestinal resection. Some authors consider that patients with chronic symptoms can be treated conservatively and when symptoms are persistent or refractory to treatment, resection is imperative. Others, demonstrated that jejunoileal diverticula, compared to diverticula of the duodenum, potentially will perforate and develop abscesses, recommend a more aggressive surgical approach in view of the lower post-operative risk of an elective intestinal resection. Exploratory laparotomy and resection of affected intestinal segment with primary anastomosis is mandatory in case of perforation, abscesses and obstruction.[12-14]

From those conclusions she was decided to undergo operating procedure to remove the diverticle at jejunum proximal projection. In the surgery procedure report, it was stated that diverticle at jejunum proximal has been taken and there was no sign of inflammed diverticle, abscess or perforation. The majority of jejunal diverticula are composed of a thin wall composed of mucosal, submucosal, and serosal layer. These pseudodiverticula occur along the mesenteric border of the small bowel, usually hidden within the leaves of the mesentery. The cause of these diverticula is unclear, although it is likely that an abnormality in peristalsis,

intestinal dyskinesia, and high intraluminal pressures plays a role in the pathogenesis.[15-17]

It has been recently reported that DBE, a novel and unique technique, can successfully treat jejunal diverticular bleeding, and allow to-and-fro observation of the small intestine. More importantly, it permits tissue diagnosis and therapeutic intervention. Chen et al, evaluated the efficacy of endoscopy diagnosis and therapy for jejunal diverticular bleeding and the result was double balloon endoscopy is a safe and effective treatment modality for jejunal diverticular bleeding.[18-20]

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