



Nonsteroidal Anti-inflammatory Drug (NSAID) Induced Hemorrhage from Asymptomatic Duodenal Diverticulum: Report of Three Cases

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Abstract

Usually, duodenal diverticula are asymptomatic. Only 10% are symptomatic and around 1% of patients require surgical intervention due to complications. We present three cases of duodenal diverticula that presented with nonsteroidal anti-inflammatory drug (NSAID) induced upper gastrointestinal bleeding. Two were managed surgically and one could be managed endoscopically and is on proton pump inhibitors with regular follow-up.

Keywords: Duodenal Diverticula, NSAID, endoscopy

Introduction

Duodenal diverticulum (DD) was first described by Chomel (1710). About 90% of DD cases are asymptomatic. 5 to 10% are symptomatic and only 1% or less of patients need surgical intervention as a result of various complications, such as pancreatitis, gangrene with perforation, biliary obstruction, intestinal obstruction, pyloric obstruction, ureteral compression, and malignancy, or less commonly due to upper gastrointestinal (GI) bleeding [1]. We present three cases of NSAID-induced bleeding from asymptomatic duodenal diverticulum.

Case No. 1

This 35-year-old male presented with a history of severe epigastric pain and melena for the last three days. The patient had been taking Diclofenac sodium (NSAID) for the last 15 days as analgesic for ureteric colic. There was no past history of peptic ulcer disease. On examination the patient was anemic with tachycardia. On investigation, Hb was 7 gm% and the rest of the blood investigations were within normal limits. Ultrasound of the abdomen was normal. As there was a history of oral NSAID, the patient was managed as a case of drug-induced upper GI bleed. He was resusci-

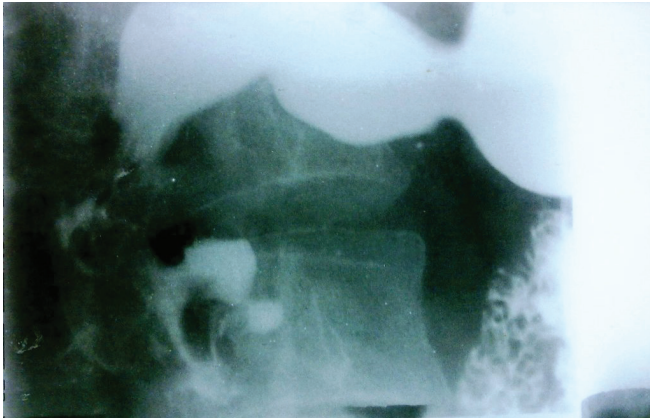


Figure 1. Barium study of stomach and duodenum showing big diverticulum at the medial border of the 2nd part of duodenum (arrowed).

tated with IV normal saline, injection pentaprazole and blood transfusions. Upper GI endoscopy done in emergency did not reveal gastric or duodenal ulcers. Bleeding stopped with conservative management. Barium swallow with follow-through was done to find out the cause of bleeding. The stomach and duodenal bulb were normal, but there was a big diverticulum on the medial border of the second part of the duodenum (Figure 1). As there was a fresh episode of massive bleeding subsequently, diverticulectomy was done. The patient has been asymptomatic for the last 11 months.

Case No. 2

This 65-year-old male presented with a history of mild epigastric pain and black-colored stools for the previous one week. History revealed that he had been taking Diclofenac sodium (NSAID) for the last 20 days as treatment of osteoarthritis of the knee joints. There was no past history of peptic ulcer disease. On examination he was pale with tachycardia and ill-looking. Blood investigation revealed Hb at 6.5 gm% and the rest of the investigations were within normal limits. Ultrasound of the abdomen was normal. The patient was managed on the line of a drug-induced gastric hemorrhage as he was on oral NSAID. He was given IV injection pentaprazole and blood transfusions. Emergency endoscopy was done, but there was no ulceration of the stomach or duodenal bulb. To ascertain the cause of bleeding, barium swallow with small-bowel follow-through was done. The stomach and duodenal bulb were normal; there was a diverticulum on the medial border of the 2nd part of the duodenum (Figure 2). After confirmation of diverticulum as the cause of bleeding, therapeutic



Figure 2. Barium study of stomach and duodenum showing small diverticulum at the medial border of the 2nd part of duodenum (arrowed).

endoscopy was done. An injection of 6 cc of 1:10,000 of adrenaline was given in the area adjacent to the ulcer, causing the bleeding to stop. Keeping in mind the high incidence of rebleeding, the patient was advised of diverticulectomy but he refused. He has been on proton pump inhibitors and on regular follow-up for the last 6 months without any episode of rebleed.

Case No. 3

This 28-year-old male presented with a history of severe epigastric pain and dark-colored stool for the last five days. The patient gave a history of taking Indomethacin capsules on and off for arthritic pain for the last one month. There was no past history of peptic ulcer disease. On examination the patient was anemic. On investigation, Hb was 8 gm% and the rest of the blood investigations were within normal limits. Ultrasound of the abdomen was normal. As there was a history of oral NSAID, the patient was managed as a case of drug-induced upper GI bleed. He was treated with IV normal saline, injection pentaprazole and blood transfusions. Upper GI endoscopy done in emergency did not reveal gastric or duodenal ulcers. Melena stopped with conservative management. Barium swallow with follow-through was done to find out the cause of bleeding. The stomach and duodenal bulb were normal, but there was a big duodenal diverticulum in the 3rd part of the duodenum (Figure 3). As the size of diverticulum was huge and there are always chances of massive rebleed, diverticulectomy was advised. The patient un-

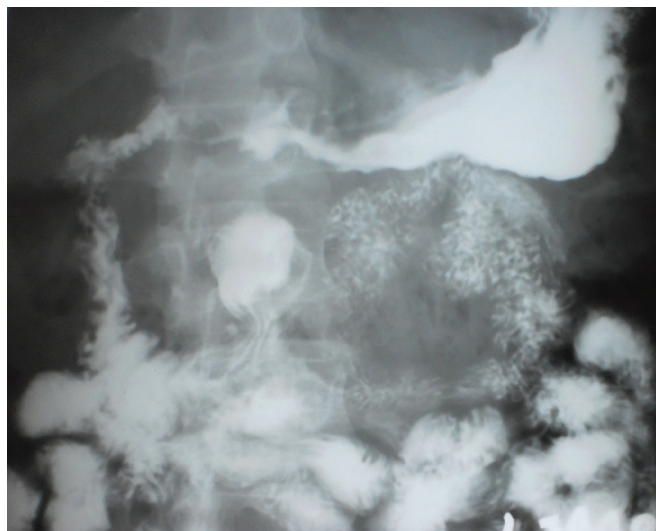


Figure 3. Barium study of stomach and duodenum showing giant diverticulum in the 3rd part of duodenum (arrowed).

derwent diverticulectomy – he has been asymptomatic in the post-operative period.

Discussion

Duodenum is the second most common site for diverticula after the colon. It is usually single but multiplicity is noted in 10 to 15% of cases. DD are infrequent before the age of 30 years, with a slight predominance of females (ratio 1.6:1). With advancing age incidence rises [2], the incidence of duodenal diverticulum is variable and is different with different investigating tools. With upper gastrointestinal radiography, the incidence is 0.016 to 6%, with endoscopic retrograde cholangiopancreatography at 9 to 23% and 6 to 22% in cases at autopsy [3,4].

Clinical diagnosis of DD is difficult as there is no classical presentation. Only 5 to 10% of DD patients suffer from clinical symptoms, of which only 1% or less need surgical intervention due to complications. The reported incidence of DD bleeding is about 7% [5]. Inflammation of diverticula due to inadequate drainage is the main cause of bleeding, but other possible causes of bleeding are Dieulafoy's lesions, intradiverticular polyps, aortoenteric fistula, erosion by bezoars, and ulceration of ectopic gastric mucosa in the periampullary diverticulum [6]. NSAID can cause ulceration of the stomach and duodenum and an upper GI hemorrhage in patients without any previous history of peptic ulcer disease. Duodenal diverticula being a mucosal outpouching can harbor ectopic gastric mucosa. Therefore, oral NSAID can cause ulceration of ectopic gastric

mucosa lying in DD, and induce a hemorrhage from asymptomatic duodenal diverticulum (as in our cases).

Hemorrhage from DD is more frequent than usually thought. Thus, in case of upper GI bleeding, a high index of suspicion should be kept in mind regarding the presence of DD as a cause of upper gastrointestinal bleeding when more obvious and common causes of bleeding at the esophagogastric level have been excluded endoscopically [5].

With the help of upper GI radiography and upper GI endoscopy (especially with a side-viewing endoscope), most duodenal diverticula can be diagnosed [7]. Diagnostic sensitivity decreases if diverticulum is located in the 3rd or 4th part of the duodenum. Only 30% of bleeding diverticula can be diagnosed with endoscopy alone. Angiography alone or in combination with 99Technetium-labeled red cell scanning can diagnose DD where endoscopy fails to diagnose. Most cases of DD can be diagnosed with ERCP [5]. Computerized tomography and magnetic resonance imaging scans are useful imaging modalities to diagnose DD, picking up duodenal diverticula larger than 3 to 4 cm in size. The latest diagnostic tool is magnetic resonance cholangiopancreatography. It can guide the diagnostic suspicion of duodenal diverticula, which can be established through duodenography with an X-ray or a computed tomography scan with oral contrast [8].

Usually, DD are asymptomatic; therefore, no elective surgical intervention is indicated, but treatment criteria in children with diagnosed DD are different and elective surgery can be advised to avoid a broad range of serious complications at a later age [7]. Endoscopic hemostasis, endoscopic incision and ligation of the diverticulum, embolization and surgery (open/laparoscopic) are available options for treatment of DD [9,10]. Endoscopically, sclerotherapy with epinephrine, ethanol injection, heater probe application, hemoclip or argon plasma coagulation can be done to stop the bleeding from DD. Sometimes endoscopic thermal therapy can result in perforation as duodenal diverticula have a thin wall. In principle, hemocclipping and argon plasma coagulation cause less tissue trauma and can be used for bleeding cases [11,12,13]. As there is a high incidence of rebleeding up to 13% [4], usefulness of an endoscopic technique as a definite procedure

is limited [14]. Super-selective arterial embolization is a definitive and successful procedure to stop bleeding, but it is technically a very demanding procedure with a high learning curve [15]. Surgery (open or laparoscopic) is the definitive treatment, carrying a leak rate of 30 to 50% [4,16].

Conclusion

The incidence of duodenal diverticula is higher than previously thought as they are mostly asymptomatic and case reports are scarce in literature. All cases of upper GI bleed (with or without intake of NSAID) should be carefully evaluated to correctly diagnose the condition by using proper imaging modalities. Endoscopic management is possible in the majority of patients, and should be attempted in appropriate bleeding patients.

Conflict of interest statement

The authors have no conflicts of interest to declare.

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