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Endoscopic management of intramural spontaneous duodenal hematoma: A case report

Valerii G *et al.* EUS drainage of spontaneous duodenal hematoma

Giorgio Valerii, Vittorio Maria Ormando, Carlo Cellini, Luca Sacco, Carmelo Barbera

Abstract**BACKGROUND**

Intramural Duodenal hematoma is a rare condition described the first time in 1838. This condition is usually associated with blunt abdominal trauma in children. Other non-traumatic risk factors for spontaneous duodenal haematoma include several pancreatic diseases, coagulation disorders, malignancy, collagenosis, peptic ulcers, vasculitis and upper endoscopy procedures. In adults the most common risk factor reported is anticoagulation therapy. The clinical presentation may vary from mild abdominal pain to acute abdomen and intestinal obstruction or gastrointestinal bleeding.

CASE SUMMARY

The aim of this case summary is showed a case of intramural spontaneous hematoma with symptoms of intestinal obstruction that was properly drained endoscopically by innovative system lumen-apposing metal stent (LAMS) Hot AXIOS™ stent (Boston Scientific Corp., Marlborough, MA, United States).

CONCLUSION

Endoscopic LAMS Hot AXIOS™ stent is a safe and feasible treatment of duodenal intramural hematoma, in our case.

Key Words: Duodenal hematoma; Several pancreatic diseases; Endoscopy complication; AXIOS™ stent; Case report

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Core Tip: The present case explored the feasibility, safety and efficacy of an endoscopic ultrasound-guided drainage of spontaneous duodenal hematoma using. The new lumen-apposing self-expandable metallic stent Hot AXIOS™ could be considered a valid alternative to conventional endoscopic incision of the hematoma by using a needle-knife or a biopsy forcep or surgical drainage and percutaneous drainage with pain and persistent duodenal ulcer for weeks.

INTRODUCTION

Intramural duodenal hematoma (IDH) is a rare intestinal condition described for the first time at autopsy in 1838^[1] **3** and the first source in the PubMed database accessing the MEDLINE database (<http://www.ncbi.nlm.nih.gov/pubmed/>) dates from 1952^[2].

This condition is usually associated with blunt abdominal trauma in children^[3] and in adults (> 70% of cases), upper endoscopy procedures (duodenal biopsy or injection therapy for bleeding peptic ulcers) or various non-traumatic conditions. These include several pancreatic diseases even if the association remains unclear, certain coagulation disorders (anticoagulant therapy, hemophilia, and Von Willebrand disease, Henoch-Schonlein purpura), malignancy, collagenosis, peptic ulcers and vasculitis^[4-7].

Clinical symptoms for IDH may vary from vague abdominal pain to acute abdomen, intestinal obstruction or gastrointestinal bleeding^[3,8] and diagnosis is subsequently

confirmed by magnetic resonance imaging or computed tomography (CT) and upper gastrointestinal endoscopy (UGIE).

Most IDH cases resolve spontaneously or with ¹ correction of abnormal coagulation. Percutaneous drainage or surgery may be needed in some refractory IDH cases, malignancy, perforation and intestinal tract obstruction.

Here we present the use of the innovative lumen apposing metal stent catheter (LAMS) Hot AXIOS™ (Boston Scientific Corp., Marlborough, MA, United States) in case a case of spontaneous IDH with intestinal substenosis and non-responsive to conservative management, in a patient without risk factors. This innovative device, thanks to a lumen apposing SEMS (LA-SEMS) fitted onto electrocautery-enhanced tip catheter, is safe and feasible in gallbladder drainage, choledochoduodenostomy and drainage of pancreatic fluid collections. In recent years, Hot AXIOS™ has also been used for off-label indications including gastrojejunostomy, gastro-gastrostomy and drainage of postsurgical collections. Herein we report the use of Hot AXIOS™ in the rare digestive disorder: Spontaneous IDH.

CASE PRESENTATION

Chief complaints

A 51-old man was admitted to the hospital with abdominal pain, bloating and vomiting.

History of present illness

The clinical data suggested a diagnosis of intestinal obstruction.

History of past illness

The patient did not report comorbidities or recent abdominal trauma without relevant previous medical history and in particular without having taken anti-platelet medication.

Personal and family history

He did not have relevant family history.

Physical examination

Physical examination on admission revealed slight tenderness over the epigastric region and right flank.

Laboratory examinations

Initial biochemical analysis indicated neutrophilic leukocytosis ($13.07 \times 10^9/\text{L}$) and an increased level of C-reactive protein (CRP) without alterations of serum hemoglobin, D-dimer, platelet function and coagulation parameters.

Imaging examinations

A contrast-enhanced abdominal CT scan revealed an IDH (Figure 1A). On admission UGIE and then endoscopic ultrasound (EUS) confirmed submucosal swelling of the second part of the duodenum that measured approximately 90 mm along the long axis with substenosis of the duodenal lumen (Figure 1B).

MULTIDISCIPLINARY EXPERT CONSULTATION

A conservative approach was attempted with clinical observation and empirical antibiotic therapy. The patient was discharged in good clinical condition after 8 d of intravenous antibiotic therapy.

FINAL DIAGNOSIS

Intramural spontaneous duodenal hematoma.

TREATMENT

After 48 h the patient was readmitted to the hospital due to clinical relapse. Biochemical analysis indicated a significant increase of both leukocytosis and CRP and the radiological evaluation confirmed the previous diagnosis. After 10 d a multidisciplinary evaluation was performed and minimally invasive endoscopic treatment was proposed.

EUS guided drainage was performed with the Hot AXIOS™ system. A direct LAMS 15 mm × 10 mm was inserted into the submucosa lumen thanks to an electrocautery-enhanced tip catheter and released under complete EUS control, after the second flange was deployed in the duodenal lumen (Figure 2A). UGIE control confirmed the correct LAMS placement and hematinic material associated with slightly purulent drainage was observed (Figure 2B).

OUTCOME AND FOLLOW-UP

A control CT scan demonstrated the presence of LAMS and the complete drainage of the intramural collection (Figure 2C). The patient was discharged in good clinical condition after 7 d. After an additional two weeks he repeated UGIE which revealed a complete resolution of the duodenal bulging and the LAMS was contextually removed with complete closure of the mucosal defect with clip. At 30-d follow-up the patient was completely asymptomatic.

DISCUSSION

IDH is a rare condition usually caused by trauma, anticoagulant therapy, rupture of a duodenal aneurysm or biopsy^[4-7,9]. Rare cases of IDH have been also described as a consequence of acute pancreatitis^[3] or after ERCP procedures^[10].

CT and MRI represent the most sensitive diagnostic exams for IDH. Radiological exams have a role both for diagnosis as well as follow up of small bowel hematoma with-in two weeks^[11,12]. Once IDH is confirmed, conservative management with fasting and total parenteral nutrition should be given^[13]. Traditionally, in case of persistent IDH, surgical drainage^[14,15] and percutaneous drainage were performed^[16], both causing great trauma for the patient. The indications for surgical intervention are not well clarified, certainly in the case of occlusive symptoms over seven to ten days or where there is evidence of perforation with a generalized peritonitis^[17].

To date there are few described cases of endoscopic drainage of duodenal hematoma. This consists of endoscopic incision of the hematoma using a needle-knife or a biopsy

forcep in order to obtain rapid submucosal decompression^[18,19] with improvement of abnormal laboratory findings and abdominal pain in up to one week. The persistence of duodenal ulcer at the site of endoscopic incision has been also described with a complete resolution only after one month^[18].

In our case we had a patient with an unremarkable previous medical history, with no risk factors for IDH who presented with intestinal pseudo-obstruction symptoms and leukocytosis without evidence of pancreatitis. We firstly attempted a conservative approach according to the existing data but after recurrence of symptoms an endoscopic approach was proposed.

The Hot AXIOS™ lumen-apposing stent is a novel double-flanged covered, self-expanding metal stent, safe and effective in gallbladder drainage, choledochoduodenostomy and drainage of pancreatic fluid collections. In the recent years, Hot AXIOS™ stents have also been used for off-label indications including gastrojejunostomy, gastro-gastrostomy and drainage of postsurgical collections.

Here we present the use of Hot AXIOS™ in a rare but possible digestive disorder with a rapid and complete resolution of this insidious clinical entity, as confirmed by CT scan and with only 7 d length of stay without abnormal laboratory findings and abdominal pain after the procedure.

CONCLUSION

In our experience Hot AXIOS™ is a safe and effective endoscopic procedure in IDH, reserved for patients who are not responsive to conservative management, however it should be performed by expert endoscopists trained in EUS and radiological procedures. To reduce the rate of postoperative complications and improve clinical outcome a previous careful clinical evaluation focusing on coagulopathies is mandatory.

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