



Intramural Duodenal Hematoma after Upper Gastrointestinal Endoscopic Biopsy in Children: Two Case Reports and Literature Review

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Abstract

Intramural duodenal haematoma is an uncommon lesion, usually a complication of blunt abdominal trauma in children and young adults. We present two clinical cases of intramural duodenal haematoma following endoscopic biopsy, which caused partial duodenal obstruction and pancreatitis and resolved with conservative management.

Keywords: Intramural duodenal haematoma; Endoscopic biopsy complication; Conservative management

Introduction

Endoscopic biopsies are a widely used diagnostic tool for celiac disease, gastric ulcers and graft versus host disease. An intramural duodenal hematoma (IDH) is a rare complication of endoscopic biopsy. To our knowledge, there have been 30 other reported cases in literature of this complication and 21 (70%) [1,2] of them presented in patients 18 years old and younger. Most IDHs require conservative management, however it is also associated with pancreatitis, duodenal perforation and biliary obstruction, and, therefore, it is a complication that all pediatric endoscopist should be aware and cautious. We present two clinical cases here of post-endoscopic biopsy IDHs and review literature regarding diagnosis and management of IDH. The first case is of a boy with no previous risk factors, while the second case is in a patient with long history of immunosuppression and a previous bone marrow transplant.

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Case Presentation

Case 1

A 12 year old boy underwent an upper endoscopy because of complaints of poor appetite, inconstant feces and abdominal pain. He had no history of bleeding or failure to thrive. The endoscopy was performed with "Olympus" video gastroduodenoscope (8.8 mm diameter). Multiple lesions in the antrum area were observed and biopsies of the esophagus, stomach and duodenum were obtained using "Olympus" forceps. Histological examination showed mild inflammation of the esophagus and a pathological diagnosis of reflux esophagitis was concluded. After the procedure the patient was stable and was discharged home with no present complaints. Two hours after the discharge, he was re-admitted with abdominal pain (VAS-10) and frequent vomiting. On physical examination diffuse abdominal tenderness and bloated abdomen were observed, arterial blood pressure- 106/75 mmHg, pulse- 86 b/min. Blood tests showed leukocytosis ($14.00 \times 10^9/l$), hemoglobin of 125g/l, and hematocrit 32.8%, and alkalosis (pH 7.49, pCO_2 21.3 mmHg, pO_2 82.5 mmHg, HCO_3 16.4 mmol/L, SBE -6.3 mmol/L). His INR (1.4) was slightly prolonged. During the next few days his hemoglobin dropped to 109g/l, while the metabolic disorder and INR stabilized.

On admission an abdominal ultrasound (Figure 1) showed a solid mass, similar to a hematoma, compressing the liver and associated to the duodenum. In fear of a perforated duodenum, a contrast computer tomography (CT) was administered. Because of frequent vomiting, only intravenous contrast was used. The CT (Figure 2) confirmed a nonhomogeneous, well circumscribed oval mass, filled with fluid, in the second part of the duodenum and local compression of the biliary tract- consistent with the signs of an IDH. Since no signs of a perforation were observed during the CT, conservative treatment, consisting of total parental nutrition, painkillers, proton pump inhibitors and nasogastric suction, was chosen. Repeated abdominal ultrasounds, a CT and video

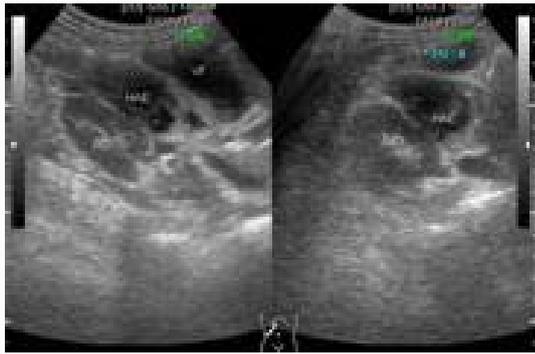


Figure 1: Ultrasound showing a hypoechoic fluid filled mass by the duodenum. HAE- hematoma.



Figure 2: Abdominal CT revealing a nonhomogeneous, oval mass, filled with fluid, in the second part of the duodenum- signs of an IDH.

endogastroduodenoscopy were used for the control of the hematoma. Though there were signs of bowel obstruction, non operative management was continued and the patient was discharged home after 21 days from the endoscopic biopsy.

Case 2

A 13 year old boy with history of graft versus host disease after a bone marrow transplant due to myelodysplastic syndrome was examined because of weight loss. Upper gastrointestinal endoscopy was performed to determine the presence of chronic graft versus host disease. Before the procedure the patient had slight anemia (Hemoglobin- 115g/L) and thrombocytopenia (Platelet count- $58 \times 10^9/L$). The gastroduodenoscopy revealed erosive esophagitis, varicosis of the esophageal veins, gastropathy and duodenogastric reflux. Histological examination confirmed low activity graft versus host disease of the gut.

Immediately after the procedure the patient presented with intense abdominal pain and frequent vomiting. On physical examination the patient had a compulsory position, diffuse abdominal tenderness. The hemoglobin level had decreased to 92g/L, while amylase levels were increased (3783.4 U/L).

Suspecting acute pancreatitis an abdominal ultrasound was ordered. It revealed a 70 by 50mm mass, resembling a hematoma by the duodenum with no oedema signs of the pancreas (Figure 3). A CT (Figure 4) and upper endoscopy confirmed an intramural hematoma in the second part of the duodenum.

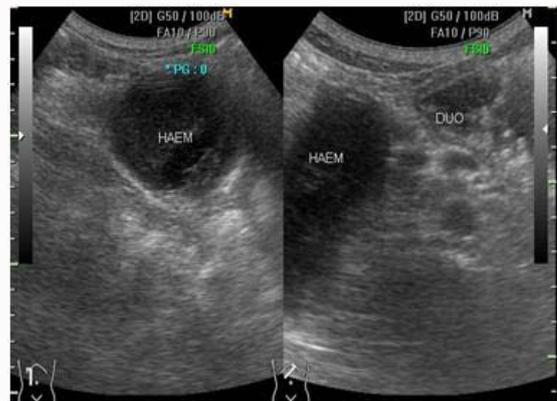


Figure 3: Ultrasound revealing a 7x5cm haematoma of the duodenum. HAEM- hematoma, DUO- duodenum.

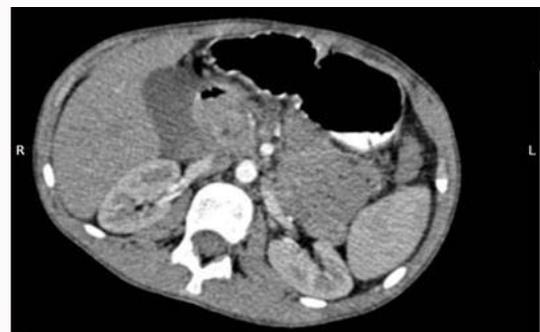


Figure 4: Abdominal CT of the second patient revealing a hyperdense mass by the second part of the duodenum.

Conservative management, consisting of intravenous fluids, parenteral nutrition, antibiotics and painkillers, was chosen. After 13 days a resolution of the hematoma was observed and the patient was transferred to the oncohematology ward for further treatment.

Discussion

Even though the first case of IDH was reported in 1838, the incidence of it is still unknown. IDH is usually a consequence of a blunt abdominal trauma and predominant in children as mentioned before. Guzman reports that endoscopic complications in children present only in 2% of cases, and most are associated with the anesthesia or bleeding and perforation [3]. The only 2 patients that developed an IDH post endoscopy in our hospital are described here. One of the mechanisms, thought to contribute to the development of an IDH is the duodenum's fixed retroperitoneal position and the rich submucosal vascular plexus, which is prompt to bleeding [1,4]. Though there are no proven risk factors for IDH after an endoscopic biopsy, previously reported cases have been associated with malnutrition, anticoagulant therapy [5], and post transplant patients. Some authors report an IDH in patients with no previous medical history [6,7] such as in our first clinical case. Our second case portrays the reported association of an IDH in transplant patients [6,3]. J Ramakrishna et al. [8] reports that IDH after endoscopic biopsy is usually the result of thrombocytopenia and levels of over $50 \times 10^9/L$ should be sustained at least for 48 hours after the procedure. It should also be noted that a study of 24 bone marrow transplants with suspicion of graft versus host disease, showed that gastric antrum biopsies were more sensitive for the diagnostics than biopsies from the duodenum or rectum [9].

In consideration this and of the risk factors of a developing IDH for such patients, duodenal biopsies may not be necessary for the diagnosis of graft versus host disease and should be performed only with strong indications.

Because of its retroperitoneal position, any trauma to the duodenum can present itself with unspecific symptoms. The most common are reported to be abdominal pain and vomiting or hematemesis usually within 48 hours of the trauma mechanism, diffuse abdominal tenderness [1,2,6,7]. Laboratory findings are also unspecific and are associated with such complications of an IDH as pancreatitis and cholestasis. In our first case, the admission findings showed only metabolic alkalosis, which was most likely due to the patients vomiting. Later on, hemoglobin level fell slightly, but did not require any blood transfusions. And as the obstruction of the biliary tree by the hematoma progressed, total bilirubin levels elevated. The second patient had decreased platelets and hemoglobin due to his primary disease, after the biopsy he first presented with high amylase levels, followed by increased pancytopenia and anemia.

Imaging techniques such as ultrasound, CT or magnetic resonance imaging (MRI) [10,11] are used for diagnosing IDH. In our first case, an upper gastrointestinal endoscopy was also used as a diagnostic tool. Though not standardized, each one of the imaging techniques has its own place in the diagnostics of an IDH. Ultrasound is usually one of the first to be performed for a child presenting with abdominal pain. D Antoniou et al. [10] reports that a nonperistaltic hypoechoic mass associated to the duodenum should give a big suspicion of an IDH. However, it is hard to distinguish the hematoma from a pancreas pseudocyst or abscess and ultrasound should not be used as the only diagnostic test. Due to its low cost and safety for the patient, it should be considered as one of the main tools for the control of the hematoma during the course of treatment.

Computer tomography is one of the primary diagnostic tools of a duodenal trauma [12], which can help differentiate an IDH from a perforated duodenum and, thus, help determine the treatment of choice. In a retrospective study, done by Jeffrey R et al. [11], pneumoperitoneum and extravasation of contrast were found to be associated with a duodenal perforation. However, KM Kassai et al reported that in 5 children with a duodenal perforation, none showed extravasation of contrast on their CT scans, while of the 14 with an IDH no specific signs on a CT were seen at all, and they were diagnosed either using an ultrasound or video endogastroduodenoscopy [13].

Literature indicates that conservative management should be of choice for IDH. 16 of the 21 previously reported cases of an IDH in pediatrics were treated in this manner. Nonoperative management consists of nasogastric suction, no oral feeding, intravenous fluids, and parenteral nutrition [1,7,12]. The resolution of a hematoma is usually observed within 2-3 weeks.

Surgical treatment is to be preferred in the case of duodenal perforation or no clinical improvement with conservative management after 7-14 days [1]. Percutaneous drainage of the hematoma guided by CT [14] or ultrasound [15] can also be of choice. J Y Lee et al. [16] described endoscopic decompression of an IDH after unsuccessful conservative treatment. The patient, first presented here, had total duodenal obstruction and, if conservative management would not have been successful, endoscopic drainage of the hematoma could have been considered as the treatment of choice.

Conclusion

There have been only a few cases as of yet of IDH after upper intestinal endoscopy biopsy. Though it is a rare complication, without appropriate treatment it can have lethal results, whereas a timely diagnosis can often lead to successful conservative management. That is why every patient, especially one with medical history of anticoagulation or immunosuppression, presenting with abdominal pain and vomiting after a video gastrointestinal endoscopic biopsy should be examined for an IDH. Ultrasound and CT are both adequate choices for the diagnostics of IDH, however CT is preferred for the primary diagnosis, where as ultrasound can be used as a safe technique to monitor the resolution of the hematoma. Non-operative management should be preferred for stable patients with surgical treatment reserved for unstable patients and unsuccessful conservative treatment cases.

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