

Intramural haematoma of the duodenum : A rare cause of duodenal obstruction

E. de Bree, G. Schoretsanitis, J. Melissas, D. Tsiftsis

Department of Surgical Oncology, University of Crete - Medical School, Herakleion, Greece.

Abstract

Intramural haematoma is a rare cause of duodenal obstruction. Its most common cause is abdominal trauma. Diagnostic difficulty arises if the patient or the child's parents fail to mention the episode of trauma, regarding it as an unrelated or insignificant event, as in the presented case. Computed tomography is the imaging modality of choice. Intramural duodenal haematoma is best treated conservatively, since operative treatment is associated with a high complication rate and longer hospitalization. (*Acta gastroenterol. belg.*, 1998, 61, 485-487).

Key words : duodenal haematoma, duodenal obstruction, duodenal injury.

Introduction

The list of causes of duodenal stenosis and obstruction is long and includes congenital, acquired, and iatrogenic as well as benign and malignant tumours (table I). A rare cause of duodenal stenosis is traumatic intramural haematoma. We report a case of delayed traumatic haematoma of the duodenum which caused complete obstruction and discuss pathogenesis, diagnosis and treatment.

Case report

A 15-year-old boy was admitted to the department of internal medicine of our hospital with a 2-day long history of epigastric pain and vomiting. No other symptom was present. Physical examination revealed only mild epigastric tenderness. Laboratory investigations revealed anaemia (Hb : 10 g/dl), but normal white blood differential count. Coagulation profile, liver function tests and serum amylase were all normal. A barium meal study demonstrated complete obstruction of the second part of the duodenum and the patient was referred to our department. Upper GI endoscopy showed edema of the duodenal wall and complete obstruction due to external compression of the second part of the duodenum. Abdominal sonography revealed a hypochoic duodenal mass with a maximal diameter of 5 cm, suggestive of duodenal haematoma. When the patient's history was detailed an episode of a fall off his bicycle 4 days prior to admission was reported. His abdomen was forced against the handle but the impact was negligible. Computed tomography of the abdomen confirmed this diagnosis. An intramural haematoma of the second part of the duodenum, 5 cm × 5 cm, without

other pathology was seen (fig. 1). The patient was treated conservatively with nasogastric drainage and intravenous fluids for ten days and then oral fluids were introduced. He was discharged home after 14 days of hospitalization. A follow-up sonography, 18 days after the initial diagnosis, showed partial liquefaction with septa formation in the lesion, highly suggestive of resorption of the haematoma (fig. 2). After one month he was in good condition. Later he was lost for follow-up examination.

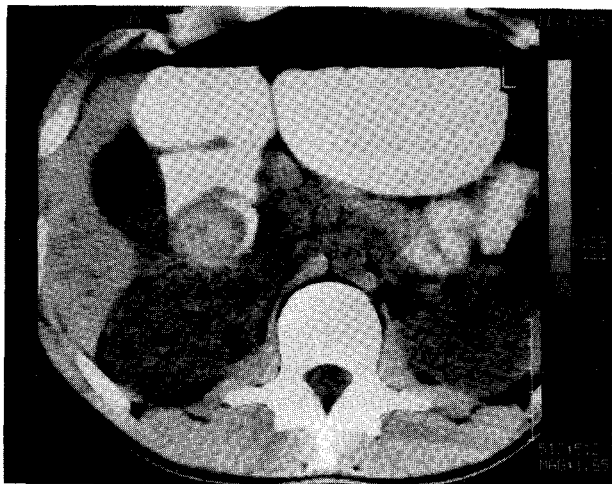


Fig. 1. — Computed tomography demonstrating an intramural haematoma of the second part of the duodenum.

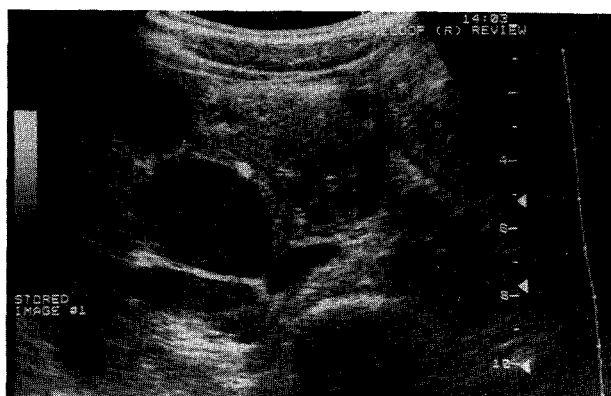


Fig. 2. — Follow-up sonography showed partial liquefaction with septa formation in the lesion, highly suggestive of resorption of the haematoma.

Correspondence to : Eelco de Bree, Department of Surgical Oncology, General University Hospital, P.O. Box 1352, Herakleion 71110, Greece.

Table I. — Causes of duodenal obstruction in children and adults

Atresia of the duodenum	Tuberculosis
Diaphragms	Crohn's disease
— congenital	Pancreatitis
— after chronic use of NSAIDs or ASA	Ischemia
Annular pancreas	Postradiation stenosis
Malrotation - Ladd's bands	Postoperative stenosis
Vascular compression	Duodenal haematoma
— Superior mesenteric artery syndrome	Benign tumours (adenoma, leiomyoma, lipoma, Schwannoma)
— Preduodenal portal vein	Malignant tumours
Foreign body - trichobezoar	— Primary (adenocarcinoma, lymphoma, leiomyosarcoma)
Gall stone (Bouveret's syndrome)	— Secondary (breast cancer, melanoma, etc.)
Chronic duodenal ulcer	— Local invasion (pancreas, gastric, transverse colon renal, gall bladder carcinoma)
Duodenal diverticulum	

Discussion

Duodenal injuries are uncommon and are found in only 3.7% of all laparotomies for trauma (1). In 77.7% of the cases penetrating trauma is the cause of duodenal injury and in only 22.3% is blunt trauma, such as motor vehicle and bicycle accidents, falls and assaults, implicated (2). Intramural duodenal haematoma is seen in only 1% of children presenting with blunt abdominal trauma (3).

Duodenal haematoma may be caused by a crushing force, compressing the intestine between the external force and the vertebrae, or by a shearing force, resulting in rupture of intramural blood vessels (1-3). Because of a gradual fluid shift into the hypertonic intramural haematoma, similar to a subdural haematoma, the haematoma enlarges and causes complete obstruction of the lumen (4). Rarer causes of intramural duodenal haematoma are listed in table II (5-8).

Table II. — Causes of duodenal haematoma

Trauma (crushing or shearing force)
Iatrogenic injury during
— Small bowel biopsies
— ERCP
— endoscopic haemostasis of bleeding duodenal ulcers
Bleeding disorders, anticoagulant therapy
Ruptured aneurysm
Aortoenteric fistula
Pancreatic disease

Diagnostic difficulty arises if the patient or the child's parents fail to mention the episode of trauma, regarding it as an unrelated and insignificant event, as in our case (3). Most of the patients come to hospital one or two days, or even more, after the apparently insignificant injury with an insidious onset of obstructive symptoms (2-4). The most common symptoms are vomiting and abdominal pain (2-4). Complications include obstructive jaundice and acute pancreatitis (4,7-9) Associated injury to the head of the pancreas, kidney or biliary system is common (1,3,4).

Laboratory investigations are of limited value and may show anaemia, leukocytosis and elevated serum amylase and bilirubin (1,2). Plain abdominal radiographs may show features of duodenal obstruction, such as gastric dilatation, the double bubble sign and little or no air in the lower abdomen, and absence of the right psoas shadow (2,10). Upper gastrointestinal contrast study and endoscopy demonstrate an obstructing submucosal duodenal mass (2,10). Sonography and computed tomography (CT) of the abdomen may be useful to exclude associated injuries to solid organs. The sonographic appearance of duodenal haematoma is nonspecific, but sonography may be helpful in demonstrating a change in its size during conservative treatment (11). CT seems to be the imaging modality of choice. The high attenuation of the haematoma in the early stages, and even more the lack of enhancement, confirm the diagnosis (12,13). On CT and magnetic resonance imaging a characteristic ring sign may be demonstrated (13,14). CT may be also useful in differentiating duodenal perforation from haematoma without perforation after blunt abdominal trauma (12).

In earlier years, duodenal haematoma was managed most frequently by laparotomy, with evacuation of the blood clot or gastroenterostomy (4). Conservative management, including nasogastric drainage, intravenous fluid replacement, parenteral nutrition if necessary and careful observation, is now the treatment of choice in the uncomplicated case since obstruction is relieved in almost all cases (2-4). In contrast, surgery carries a high complication rate and results in longer hospitalization (4). Simple evacuation of the haematoma results in a 5% complication rate, whereas some form of bypass procedure carries an excessively high complication rate of 40% (4). Surgery should be reserved for those cases that are still obstructed after 2 to 4 weeks of treatment, that have evidence of perforation or severe injury to the duodenum or other organ, or when the diagnosis remains in doubt (2-4). The prognosis for intramural duodenal haematoma itself is excellent, although death due to pancreatitis complicating this lesion has been reported (2-4,8). There appears to be no tendency to fistula formation, but the incidence of

duodenal strictures as a long-term complication is unknown (3). The overall prognosis for traumatic duodenal haematoma is related to associated injuries.

Increased awareness of this entity as a cause of upper gastrointestinal obstruction may prevent unnecessary investigations and exploratory procedures with their costs and complications, as occurred in the past. Especially in cases of unexplained high gastrointestinal obstruction, the physician must insist on asking about a recent traumatic event, which is often regarded as unrelated by the patient and because of that not mentioned spontaneously.

References

1. IVANTURY R.R., NASSOURA Z.E., SIMON R.J., RODRIGUEZ A. Complex duodenal injuries. *Surg. Clin. N. Am.*, 1996, **76** : 797-812.
2. ASENSIO J.A., FELICIANO D.V., BRITT L.D., KERSTEIN M.D. Management of duodenal injuries. *Curr. Probl. Surg.*, 1993, **30** : 1031-92.
3. VOSS M., BASS D.H. Traumatic duodenal haematoma in children. *Injury*, 1994, **25** : 227-30.
4. JEWETT T.C., CALDAROLA V., KARP M.P., ALLEN J.E., COONEY D.R. Intramural hematoma of the duodenum. *Arch. Surg.*, 1988, **123** : 54-8.
5. ZEPPA M.A., FORREST J.V. Aortocenteric fistula manifested as an intramural duodenal hematoma. *AJR*, 1991, **157** : 47-8.
6. WARNGARD O., STENHAMMAR L., ASCHER H., CAVELL B., DANNAEUS A., IVARSSON A., LINDBERG T., LINDQUIST B. Small bowel biopsy in Swedish paediatric clinics. *Acta Paediatr.*, 1996, **85** : 240-1.
7. KARJOO M., LUISIRI A., SILBERSTEIN M., KANE R.E. Duodenal hematoma and acute pancreatitis after upper gastrointestinal endoscopy. *Gastrointest. Endosc.*, 1994, **40** : 493-5.
8. SADRY F., HAUSER H. Fatal pancreatitis due to iatrogenic intramural duodenal hematoma : a case report and review of the literature. *Gastrointest. Radiol.*, 1990, **15** : 296-8.
9. SHIH S.-L., LIN J.C.-T., LEE H.-C., BLICKMAN J.G. Unusual causes of obstructive jaundice in children : diagnosis on CT. *Pediatr. Radiol.*, 1992, **22** : 512-4.
10. VELLACOTT K.D. Intramural haematoma of the duodenum. *Br. J. Surg.*, 1980, **67** : 36-8.
11. WU C.-C. Sonographic spectrum of giant intramural hematoma : identifying a case simulating traumatic pancreatic pseudocyst. *J. Clin. Ultrasound*, 1992, **20** : 352-5.
12. YOSHINO M.T. Duodenal hematoma : CT demonstration of the ring sign. *Gastrointest. Radiol.*, 1987, **12** : 330-2.
13. KUNIN J.R., KOROBKIN M., ELLIS J.H., FRANCIS I.R., KANE N.M., SIEGEL S.E. Duodenal injuries caused by blunt abdominal trauma : value of CT in differentiating perforation from hematoma. *AJR*, 1993, **160** : 1221-3.
14. HAHN P.F., STARK D.D., VICI L.G., FERRUCCI J.T. Duodenal hematoma : the ring sign in MR imaging. *Radiology*, 1986, **159** : 379-81.