

Duodenal intramural hematoma due to blunt abdominal trauma

Künt karın travmasına bağlı duodenal intramural hematom

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Ondört yaşındaki erkek çocuk, epigastrik travmadan üç gün sonra epigastrik ağrı ve kusma şikayetleriyle hastaneye yatırıldı. Fizik muayenede, epigastriumda kitle palpe edildi ve herhangi bir peritoneal iritasyon bulgusu yoktu. Vital bulgular, biyokimyasal testler, akciğer ve abdomenin direkt grafileri normaldi. Abdominal US, BT ve üst gastrointestinal sistem endoskopisinde, duodenumda, iyi sınırlı ve hematomu düşündüren bir intramural kitle görüldü. Intraabdominal solid organlar normaldi ve serbest hava veya kontrast madde ekstravazasyonu izlenmedi. Bu nedenle, hasta US ile takip edildi. Travmadan 48 gün sonra hematom tamamen kayboldu.

Anahtar Sözcükler: Duodenal hematom, travma, duodenal perforasyon-BT-US.

A 14-year-old boy was admitted to the hospital with the complaints of epigastric pain and vomiting for three days following epigastric trauma. Physical examination revealed a palpable mass in the epigastrium without any signs of peritoneal irritation. Vital signs, biochemical analysis, chest and abdominal x-rays were normal. Abdominal US, CT and upper gastrointestinal endoscopy showed that there was a well-defined duodenal intramural mass suggesting hematoma. Intraabdominal solid organs were normal and we did not observe free air or extravasation of contrast media. Therefore, we followed up the patient by US. The hematoma completely resolved 48 days after the trauma.

Key words: Duodenal hematoma-trauma-duodenal perforation-CT-US.

Duodenal intramural hematomas in children are mostly due to blunt abdominal trauma. Because of the retroperitoneal location of the duodenum and the possibility of biliary and pancreatic involvement, early diagnosis and treatment of duodenal injuries are critical to decrease both morbidity and mortality.^[1,2,3] The differentiation of duodenal hematoma from duodenal perforation has great importance since appropriate therapy after blunt trauma depends on the exact nature of the abnormality. Unless accompanying perforation and visceral injuries are evident, duodenal hematoma often can be treated by nonsurgical procedures.^[4,5,6]

Computed tomography (CT) has been used in hemodynamically stable patients with blunt abdo-

minal trauma as the primary imaging modality^[7]. Traumatic lesions can also be detected by ultrasonography (US) and magnetic resonance (MR) imaging.^[8] Duodenography with water-soluble contrast agent can be useful in diagnosis of both partial obstruction with an intramural hematoma and perforation of duodenum. Some studies showed that duodenography and CT methods are equivocal in the diagnosis of partial obstruction and perforation of duodenum but latest reports suggest that duodenography's sensitivity is not as high as previously known.^[1,2,5]

Here we report CT and US findings of a boy who had a spontaneously resolved duodenal intramural hematoma.

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CASE REPORT

A 14-year-old boy was admitted with the complaints of epigastric pain and vomiting for three days after the soccer game in which he had been kicked in his abdomen. Vomiting had started the day after trauma. Physical examination revealed a palpable mass in the epigastrium without any signs of peritoneal irritation. The vital signs were normal. The white blood cell count was 9700 cells/ mm³ and hemoglobin level was 13.8 g/dl. Total bilirubin level, serum lipase and amylase levels were within normal limits. No occult blood was found on the stool test. Chest and abdominal x-rays were normal.

US examination of the abdomen demonstrated a 6.5x4.5 cm well-defined, heterogeneous hyperechoic mass located within the wall of the se-

cond portion of the duodenum without any flow signal in color Doppler imaging (Fig. 1A). A small amount of fluid was also present in the right paracolic gutter.

Abdominal CT examination, before and after administration of iodinated contrast agent with oral water-soluble contrast material, revealed a nonenhancing mildly hyperdense duodenal mass and normal appearance of either intraabdominal solid organ with nondilated stomach (Fig. 1B,1C). No contrast extravasation and extraluminal air was noted.

Upper gastrointestinal endoscopy showed extrinsic compression within the second portion of the duodenum without intestinal hemorrhage or perforation, however duodenal mucosa was mildly hyperemic (Fig. 1D).

All imaging findings are consistent with intra-

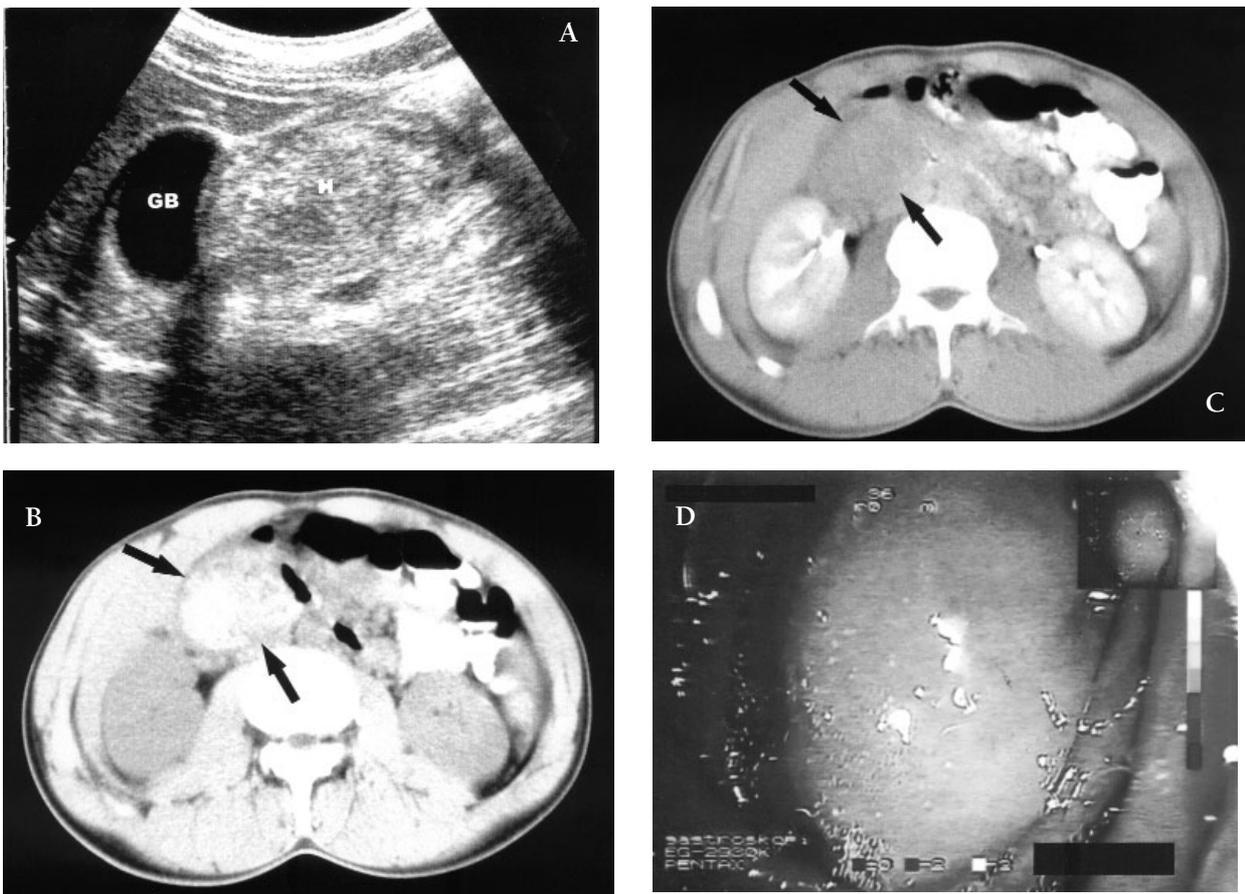


Fig.1. (A). Longitudinal US of the right upper quadrant shows a well-defined heterogeneous mass (H) within the duodenal wall and inferior to gallbladder (GB). Abdominal CT scan before (B) and after (C) administration of intravenous contrast material demonstrates a mildly hyperdense, nonenhancing hematoma (arrows) which narrows the lumen. Neither extraluminal air nor oral contrast extravasation of the contrast material was observed. (D). Endoscopic examination 4 days after the trauma demonstrates a well-defined submucosal mass filling the lumen

mural duodenal hematoma. There were no signs of perforation and accompanying organ injuries, because of this reason patient was followed up by US. Hematoma was completely disappeared 48 days after the trauma.

DISCUSSION

Trauma is the most common cause of mortality in pediatric age group and blunt trauma constitutes more than 80 % of these cases.^[8] Between 2 and 10 % of the serious blunt abdominal traumas results in duodenal injury in children.^[4,5] Duodenal injuries due to blunt traumas present diagnostic challenges. It can be associated with either intramural hematoma or perforation. Most of these adult cases are of penetrating type, while children are chiefly exposed to blunt traumas.^[1,4,9]

Determination of the type of injury has vital importance in order to secure appropriate management of therapy. Therefore various imaging techniques with greater sensitivity and specificity, must be used in blunt abdominal traumas. However, because of hematoma's retroperitoneal position, delay in the diagnosis and management is frequent and associated with increased mortality.^[1,3,6,7] In addition, the signs and symptoms such as nausea, vomiting and abdominal pain and the laboratory test results are not specific.^[4,5]

Duodenography has been the method of choice in the preoperative evaluation of duodenal hematoma for long years. It uses a diagnostic triad of intramural, extramucosal mass, mucosal fold thickening and coil-spring appearance of the valvula connivantes. Contrary to this, Timaran et al.^[1] demonstrated that duodenography has low sensitivity in patients with inconsistent findings on CT who are candidates of surgery for blunt duodenal traumas.

In the differentiation of duodenal hematoma and perforation, CT is quite valuable. The density of the mass can give diagnostic information. After intravenous contrast injection acute hematoma presents as a hyperdense mass without enhancement whereas tumor mass generally demonstrates contrast enhanced images.^[4,5] Kunin et al.^[6] reported that duodenal wall thickening and existence of fluid in the right anterior pararenal space are not diagnostic for either perforation or hemato-

ma. They also demonstrated that only the presence of extraluminal gas or the extravasation of oral contrast material could distinguish these entities from each other.

US examination is mostly satisfactory for the demonstration of duodenal hematoma, abdominal fluid accumulation, other organ lesions but it can be also used in the follow-up of conservatively managed patients.^[2,4,5,6,10]

A recent consensus has stated that most traumatic duodenal hematomas will resolve spontaneously within 5-16 days after the trauma and they do not require emergency intervention unless accompanied by abdominal organ injuries that necessitate laparotomy for persistent obstructive symptoms lasting more than 7-10 days.^[1,4,6,11] Since perforation necessitates surgical intervention, in case of blunt abdominal trauma, demonstration of hematoma with or without perforation is crucial. CT is not only a method of choice in the evaluation of abdominal injuries caused by blunt trauma in hemodynamically stable patient but also it delineates the status of solid abdominal organs and can be used as a screening test for the appropriate approach.^[3,4]

It must be remembered that a patient who has symptoms of nausea, vomiting, epigastric pain and mass after a blunt abdominal trauma might have duodenal hematoma. Nonsurgical management of duodenal trauma depends on the precise diagnosis. CT imaging confidently demonstrates the duodenal wall thickening, extraluminal air or oral contrast and usually renders duodenography unnecessary even if the duodenal wall thickness increased significantly. Both CT and US enable to show associate solid organ injuries and can be used for the follow-up of the conservatively managed patients.

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