Conservative management of traumatic acute intramural hematoma of duodenal 2nd and 3rd portion: A case report and review of literature

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Traumatic intramural duodenal hematoma (IMDH) is a rare disease occurring usually in children. The treatment modality of traumatic IMDH varies according to clinical manifestations. We had a case of a young man who had traumatic IMDH and treated nonoperatively. He had 3 weeks of conservative care and has been discharged, with follow up abdominal CT scan showing complete resolution of the hematoma. In conclusion, patient with traumatic acute intramural hematoma of duodenal 2nd and 3rd portion have excellent clinical outcomes with conservative therapy. (Ann Hepatobiliary Pancreat Surg 2020;24:109-113)

Key Words: Hematoma; Duodenum; Trauma; Conservative management

INTRODUCTION

Traumatic intramural duodenal hematoma (IMDH) is a rare disease occurring usually in childhood. However, cases of IMDH has steadily been reported in many institutions worldwide. The treatment modality varies according to the symptoms, clinical manifestations and complications presented by patients. Here we introduce a case of a young man with a IMDH caused by traumatic event, who has been treated nonoperatively for 3 weeks and has been discharged with no specific complications.

CASE

A 17-year-old male patient who had been vomiting and had poor oral intake for 4 days was admitted to our institution, after visiting another hospital. There he underwent an upper gastric endoscopy for further evaluation of any cause of gastric outlet obstruction symptoms. Upper endoscopy revealed the erosion with hyperemic mucosa in the duodenal bulb and complete obstruction of the second duodenal portion caused by external compression. Following abdominal CT scan revealed a large mass (about 8.7×4.5×5 cm) with an internal hemorrhage abutting and compressing the lumen of the duodenal second and third portion (Fig. 1A, B). With the diagnosis of enteric cyst of duodenum 2nd-3rd, he was sent to our hospital for surgical management. And esophagogastroduodenoscopy (EGD) showing extrinsic compression and ulcerative mass like lesion of duodenum 2nd and 3rd portion (Fig. 1C, D).

On his arrival to our hospital, there was no mention of any traumatic events written on referral from the other hospital, so we neglected the possibility of traumatic causes. We decided to take MRI scan to further distinguish the structural relationship of the cyst from other adjacent organs. The source of the GI symptoms revealed in MRI scan was found to be the acute intramural hematoma of duodenal 2nd and 3rd portion, and localized geographic infiltrative lesion of subcutaneous fat tissue of right anterior abdominal wall (Fig. 1E, F). At the same time, we found out that the patient had the traumatic event...
Fig. 1. (A), (B) are axial and coronal view of abdominopelvic CT, showing intramural hematoma of duodenum 2nd and 3rd portion. (C), (D) are endoscopic finding, showing extrinsic compression and ulcerative mass like lesion of duodenum 2nd and 3rd portion. (E), (F) are axial and coronal view of MRI, showing about 8.5×5.5×4.5 cm, acute intramural hematoma of duodenal 2nd and third portion.

Fig. 2. Abdominopelvic CT follow up taken on 14th day of admission showed minimal decrease in size of intramural hematoma of duodenum. (A) is axial view and (B) is coronal view.

Fig. 3. Abdominopelvic CT follow up taken on 7th week after diagnosis of IMDH showed completely resolved with very minimal periduodenal fluid left. (A) is axial view and (B) is coronal view.
the day before the symptoms developed, where he tripped
on the threshold and hit his upper stomach hard on the
metal doorknob which caused him significant pain.
Excluding any hereditary coagulopathy or hemorrhage
disease history, we diagnosed him with traumatic tra-
mural duodenal hematoma.

Since there is no standard treatment for traumatic intra-
mural duodenal hematoma, and considering the fact that
the patient had to take a national evaluation of educational
achievement test in few weeks, we decided to take on
conservative management rather than an invasive surgical
treatment. Total parenteral nutritional therapy with ad-
quate fluid replacement and nil per os (NPO) was
applied. Levin tube insertion was not necessary since
there was no significant gastro stasis. The patient was ad-
ministered 2nd generation cephalosporin antibiotics. Bl-
ood tests were taken approximately twice a week to exam-
ine abnormalities of hemoglobin decreases or electrolytes
imbalance caused with NPO. Soon after, the patient was
able to take some sips of water or small bites of fruits
with no abdominal discomfort or vomiting.

On the 14th day of admission, which also showed rare
decrease in size of IMDH (Fig. 2). And the patient was
able to eat small amounts of soft diets tolerably.
Nevertheless, the patient was able to eat tolerable amount
of food with no IV fluid replacement. After the patient
took the national evaluation of educational achievement
test, as the patient resolved in symptoms of vomiting and
poor oral intake, we decided to further follow up the CT
scan after 1 month of discharge.

7 weeks after the diagnosis of IMDH, the patient re-
visited the outpatient clinic with 3rd follow up CT scan.
On the CT scan, the intramural hematoma located in 2nd
to 3rd portion of duodenum has completely resolved with
very minimal periduodenal fluid left (Fig. 3). The patient
had no limitations to consuming foods. We decided not
to further follow up the patient.

**DISCUSSION**

The traumatic duodenal injuries occur in the 3-5% of
blunt abdominal traumas.1,2 The examples of blunt tra-
matic duodenal injuries include traffic accidents, fall
down injuries, assaulting injuries and handlebar injury.
The duodenal injury is caused by compression of duode-
um against the spine, which results in duodenal hema-
toma, laceration and perforation.1

Intramural hematoma of the duodenum (IMDH) was
first described in 1838 by McLauchlan, who described
“false aneurysmal tumor occupying nearly the whole of
the duodenum” in the autopsy note of the man died of
dehydration duodenal obstruction.4 The etiologies of IMDH
are categorized into external injury, internal injury and
spontaneous. IMDH is caused by external injuries and
trauma has been largely reported in the pediatric
patients.3,5,6 Internal injury of IMDH is characterized as

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**Table 1. Previously reported treatment cases of intramural duodenal hematoma (IMDH)**

| Author                  | Publish | Case | Etiology of IMDH | Management |
|-------------------------|---------|------|------------------|------------|
| Peterson et al8         | 2015    | 19   | Blunt trauma     |            |
| Sahn et al7             | 2015    | 29   | EGD, blunt trauma |            |
| Lourenço et al8         | 2017    | 1    | Alcoholic pancreatitis | 1          |
| Chang et al9            | 2015    | 1    | Alcoholic pancreatitis | 1          |
| Abdel Samie and Theilmann10 | 2013 | 4    | Anticoagulation   | 2          |
| Eurboonyanun et al12    | 2016    | 1    | Alcoholic pancreatitis | 1          |
| Margolis et al13        | 1976    | 5    | Blunt trauma     | 5          |
| Elmoghazy et al14       | 2015    | 1    | Pancreatitis     | 1          |
| Takishima et al15       | 2000    | 1    | Blunt trauma     | 1          |
| Lee et al16             | 2012    | 1    | Alcoholic pancreatitis | 1          |
| Yang et al17            | 2008    | 1    | Blunt trauma     | 1          |
| D’Arpa et al18          | 2015    | 1    | Blunt trauma     | 1          |

TAE, transarterial embolization; PCD, percutaneous drainage; EGD, esophagostroduodenoscopy
endoscopic injury; endoscopy itself or endoscopic biopsy.\(^7\) Approximately one out of 2000 patients who receives EGD develops duodenal hematoma. Pancreatitis is often thought to irritate the bowel to develop hematoma.\(^8,9\) Some patients develop spontaneous hematoma due to their bleeding risks, such as anticoagulant agent intake.\(^10\) Some patients have no significant cause for the spontaneous duodenal hematoma.\(^11\) Duodenal hematoma frequently causes gastric obstruction represented as abdominal pain and vomiting. Furthermore upper gastrointestinal bleeding, jaundice, and acute pancreatitis may also be present.\(^12\)

There are few cases that treated duodenal hematoma with invasive procedures. In the past, surgical treatment such as evacuation of hematoma or bypass surgery was performed.\(^13\) The lack of radiologic diagnosis had surgeons perform exploratory laparotomy after blunt trauma of the abdomen. Today, surgical procedures are often needed in intra-abdominal complications such as uncontrolled bleeding or panperitonitis.\(^14\) Delayed bowel obstruction and jaundice often led to laparotomy cases.\(^15\) Endoscopic drainage with mucosal puncture or fistula formation has also been performed without significant complications.\(^16\) If accessible through the skin, percutaneous catheter insertion was also performed for decompression of IMDH.\(^17\)

However, several case reviews and retrospective studies revealed the effectiveness of conservative care in traumatic IMDH.\(^6,9,18\) The median resolution of the IMDH is 7.69 days and the length of stay in hospital was longer in grade II duodenal injury of AAST duodenal injury scale (involving more than one portion) than in grade I duodenal injury (involving single portion). No apparent limitation of nonoperative treatments was noted, with little complications. Moreover, not only in traumatic but also IMDH caused by other etiologies are now treated with less invasive methods.\(^7\) Table 1 summarizes the previously reported treatment cases of intramural duodenal hematoma. Of the 65 patient, conservative treatment was performed in 49 patient. And thirteen patients underwent surgical treatment, percutaneous drainage in two patient, and endoscopic drainage in one patient.

Traumatic acute intramural hematoma of duodenum is rare. A thorough history taking and adequate radiologic exams are essential for diagnosis of traumatic intramural hematoma of duodenum. Patient with traumatic acute intramural hematoma of duodenal 2nd and 3rd portion have excellent clinical outcomes with conservative therapy.

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**AUTHOR CONTRIBUTIONS**

Conceptualization: JHL. Data curation: SJK, JHL, KHK. Formal analysis: SJK, SMP. Methodology: JHL, SMP, KHK. Project administration: JHL, SJK. Visualization: JHL, SJK. Writing - original draft: JHL, SJK. Writing - review & editing: JHL.

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