



# THE VALUE OF ULTRASONOGRAPHY IN DETECTING GASTRIC HAEMORRHAGE

Erman Uygun<sup>1</sup>, Omer Emanet<sup>2</sup>, Emin Gokhan Gencer<sup>1</sup>, Ozgur Sarica<sup>3</sup>, Tolga Orhan<sup>3</sup>

<sup>1</sup> Department of Emergency Medicine, Yeditepe University Hospital, Istanbul, Turkey

<sup>2</sup> School of Medicine, Yeditepe University Hospital, Istanbul, Turkey

<sup>3</sup> Department of Radiology, Yeditepe University Hospital, Istanbul, Turkey

Corresponding author's e-mail: omeremanet22@gmail.com

Received: 20/05/2024

Accepted: 17/06/2024

Published: 26/07/2024

**Conflicts of Interests:** The Authors declare that there are no competing interests.

**Patient Consent:** Written informed consent was obtained from the patient.

**This article is licensed under a Commons Attribution Non-Commercial 4.0 License**

**How to cite this article:** Uygun E, Emanet O, Gencer EG, Sarica O, Orhan T. The value of ultrasonography in detecting gastric haemorrhage. *EJCRIM* 2024;11:doi:10.12890/2024\_004625

## ABSTRACT

Gastric intramural haematoma is a very infrequent condition. It can occur due to clotted gastric haemorrhage as a result of peptic ulcer disease, or following trauma, oral anticoagulant therapy and bleeding disorders. It is usually suspected with the symptoms of gastrointestinal haemorrhage such as haematemesis, melena and haematochezia, and detected by endoscopy. In rare cases, the patient is asymptomatic or presents with non-related symptoms and can be diagnosed by computerised tomography. In this case, we report the detection of a gastric intramural haematoma during abdominal ultrasonography in a hypotensive patient who was admitted to the emergency department after sliding and falling from a height.

## KEYWORDS

Gastric intramural haematoma, ultrasonography, gastric tumour, haemorrhage

## LEARNING POINTS

- It is crucial to remember that FAST ultrasound is important in examining five areas, and epigastric bleeding appears hypochoic, making ultrasound evaluation essential.

## CASE DESCRIPTION

A 55-year-old female, post-menopausal patient without any previous medical condition was admitted to our emergency department (ED) with complaints of hypotension and syncope. The day before admission to our ED, the patient was brought to another ED due to sliding and falling from the first floor of her house to the garden, which is 3 metres in height, landing on the soil of the garden. She had fallen on her back and had severe upper and lower back pain. Neighbours who witnessed the incident called the ambulance and did not

attempt to help the patient, due to possible spinal injury. The day she fell she had no dizziness or syncope. At the hospital that she was brought to after she fell, she had been observed for six hours. The follow-ups and imaging detected no spinal, thoracic or intra-abdominal pathology. She had no additional complaints of low blood pressure or tachycardia during the observation period. The haemoglobin level was detected at 11.5 mg/dl, and there was no decrease in the tests performed four hours after the first ED visit. No intracranial bleeding was detected on the brain computerized tomography (CT)



scan. After pain treatment, the patient was discharged in otherwise good health. The day after discharge, when she woke up in the morning and got out of bed, she experienced dizziness and then syncope, and she remained completely unconscious for about 5 seconds. The patient's husband called the ambulance and at the scene, her blood pressure was 80/50 mmHg, pulse was 115 bpm. She was administered 500 cc of normal saline intravenously in the ambulance. When she arrived at the ED of our hospital, her blood pressure was 91/52 mmHg, her pulse was 110 bpm, she was conscious and oriented, her Glasgow coma scale was 15, and there were no signs of trauma on her scalp, head or neck. There were no findings in the abdominal examination other than epigastric tenderness. There was no evidence of trauma to the pelvis and extremities. On rectal examination, the rectum ampulla was empty. No intracranial bleeding was detected on the brain computerized tomography. No parenchymal organ injury or intra-abdominal free fluid was detected on abdominal ultrasonography. Point-of-care ultrasonography was performed for trauma as haemoglobin 8.7 mg/dl was detected in the patient's blood count during observation. No free fluid was observed in the Morison pouch and splenorenal area; the aortic diameter was less than 3 cm. No free fluid was observed in the pouch of Douglas, and pericardial effusion was not observed. Help was requested from the radiologist to perform a detailed abdominal ultrasound sonography (USG) on the patient. On the USG, two hypoechoic calculous stones with a diameter of 1 cm were observed in the gallbladder; pericholecystic fluid was not observed. An area of approximately 62 mm on the medial wall of the stomach corpus, which was hypoechoic compared to the gastric content, was noted. According to rectal examination, we assumed that the hypoechoic area could be a gastric intramural haematoma (GIH) due to trauma. Since the image was compatible with haematoma, examining it with endoscopic methods was recommended (Fig. 1 and 2).

The patient was transferred to the gastroenterology department for endoscopic examination. Gastroscopy revealed a mass lesion in the cardia, approximately 8–9 cm in size, extending towards the corpus greater curvature, with an ulcer of approximately 13 mm in the middle. A vascular structure with bleeding in the form of leakage was observed in this ulcer (Fig. 3). After the biopsy was taken from the mass, an argon laser was applied to both the ulcerated bleeding area and the bleeding areas at the biopsy sites, to control bleeding, which stopped. No other bleeding focus was detected in the areas examined up to the second part of the duodenum. The procedure was terminated because no active bleeding was observed. The mass lesion was evaluated as a stomach tumour. In the complete blood count taken before gastroscopy, it was observed that haemoglobin decreased to 8.1 mg/dl. The patient was given two units of erythrocyte suspension replacement after gastroscopy. No reactions or complications were observed during and after erythrocyte suspension replacement. The patient was discharged with the recommendation of follow-up with the pathology report.

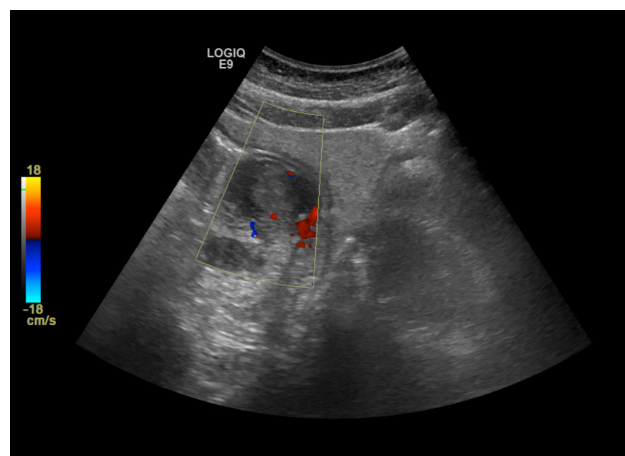


Figure 1. An area of approximately 62 mm on the medial wall of the stomach corpus, which was hypoechoic and vascularity in the area on ultrasonography.



Figure 2. An area of approximately 62 mm on the medial wall of the stomach corpus, which was hypoechoic on ultrasonography.

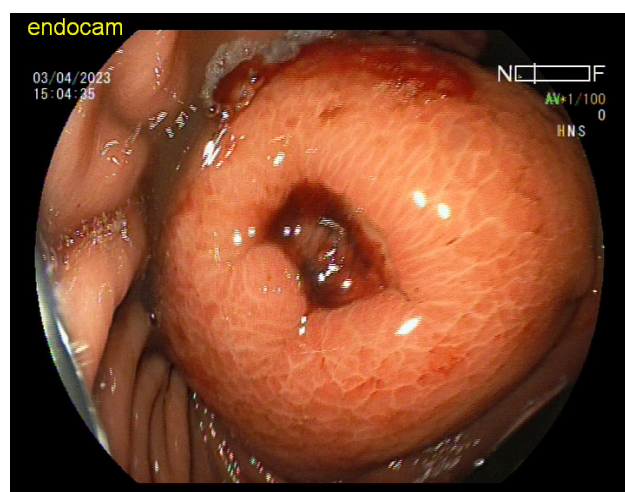


Figure 3. Gastroscopy revealed a mass lesion in the cardia extending towards the corpus greater curvature, with an ulcer.

## DISCUSSION

Gastric tumours are usually diagnosed after complications such as pain, bleeding and obstruction. Alarm symptoms, such as weight loss, dysphagia, signs and symptoms of upper gastrointestinal bleeding, anaemia and persistent vomiting, are likely to be more frequently associated with

upper gastrointestinal malignancies. Most guidelines recommend immediate endoscopy in all patients presenting these symptoms<sup>[3]</sup>. More than 10% of patients with gastric cancer have bleeding at the first diagnosis, and more than 50% of them have major bleeding<sup>[4]</sup>. Gastric tumours can remain asymptomatic without causing symptoms. Extensive studies have been carried out in the Far East (Japan and Korea) to detect these asymptomatic tumours at an early stage<sup>[5]</sup>. While patients with gastric mucosal tumours are asymptomatic, blunt upper abdominal trauma may cause bleeding<sup>[6]</sup>. In this case, abdominal ultrasonography revealed intramural haematoma due to bleeding that developed based on a gastric tumour after trauma.

GIH is a very infrequent condition with many different causes, and it develops after bleeding in the layers of the walls surrounding the stomach. The mechanism behind it depends on damage to the veins and vessel heads in these layers of the stomach. There are many vascular structures in the submucosal and muscular layers of the stomach, although there are few in the mucosal layer. There is no definitive treatment for GIH; however, it can be treated in several ways. From non-invasive to invasive methods, there are many treatment options, and these can be applied depending on the patient's condition, haemorrhage status and clinical monitoring.

The basic approach in hypotensive patients who apply to the ED after trauma is the point-of-care USG, also known as focused assessment with sonography for trauma (FAST). The components of FAST consist of an examination of five areas. The hepatorenal space, the splenorenal space and the pouch of Douglas in women are examined for the presence of free fluid. The pericardial cavity is used to exclude pericardial effusion and tamponade, and aortic diameter is measured along the aortic vessel to exclude aortic dissection. Life-threatening gastric bleeding after trauma has been reported in the literature<sup>[7]</sup>, and studies show ultrasonography's sensitivity in gastric and duodenal bleeding<sup>[8]</sup>. In our case, gastrointestinal bleeding was detected on USG in an asymptomatic patient who had no other findings that could explain hypotension.

## CONCLUSION

Gastrointestinal bleeding should be kept in mind in hypotensive patients admitted to the ED after trauma, and attention should be paid to hypoechoic images detected in the gastric lumen when performing FAST USG.

## REFERENCES

1. Mânzat Saplacan RM, Catinean A, Manole S, Valean SD, Chira RI, Mircea PA. Posttraumatic gastric wall hematoma in a patient under anticoagulant therapy. Case report and literature review. *Med Ultrason* 2011;**13**:165–170.
2. Tabbikha O, Maalouf H, Abou-Malhab C, Aby Hadeer R, Wakim R. Spontaneous gastric intramural hematoma: case report and literature review. *Cureus* 2022;**14**:e23268.
3. Maconi G, Manes G, Porro GB. Role of symptoms in diagnosis and outcome of gastric cancer. *World J Gastroenterol* 2008;**14**:1149–1155.
4. Zhou Y, Zhou Y, Lin X, Lin S, Li W. New strategy in hemorrhagic gastric cancer: a case report of complete pathological remission after neoadjuvant chemotherapy. *Medicine (Baltimore)* 2023;**102**:e32789.
5. Matsukuma A, Furusawa M, Tomoda H, Seo Y. A clinicopathological study of asymptomatic gastric cancer. *Br J Cancer* 1996;**74**:1647–1650.
6. Mohamed A, Griffiths EA, Witkowski M, Witkowska K, Ball CS. Traumatic rupture of a gastrointestinal stromal tumour with intraperitoneal bleeding and haematoma formation. *BMJ Case Rep* 2010;**2010**:bcr1220092541.
7. Miyajima M, Iinuma Y, Hirose Y, Kumagai K, Tanaka T, Sekiguchi H, et al. Massive gastric bleeding from a blunt abdominal trauma: report of a case. *Surg Today* 2010;**40**:963–966.
8. Morimoto K, Hashimoto T, Choi S, Miyata Y, Hara K, Kinoshita S, et al. Ultrasonographic evaluation of intramural gastric and duodenal hematoma in hemophiliacs. *J Clin Ultrasound* 1988;**16**:108–113.