

Diagnosis and Treatment of Medically Treated Rectus Sheath Hematoma Caused by Stabbing

Tolga Kalayci

Department of General Surgery, Agri Ibrahim Çeçen University, Agri, Turkey

ORCID:

Tolga Kalayci: <https://orcid.org/0000-0002-6977-1757>

Abstract

Rectus sheath hematoma (RSH) mainly occurs due to anticoagulant therapy, and blunt traumas may also rarely cause RSH. However, there is no case report published on the follow-up and treatment process of RSH after stabbing. A 60-year-old man was admitted after stabbing himself for suicide. The patient had a history of using clopidogrel and oral antidiabetic drugs. On physical examination, there were many entrance holes (more than 10) in the anterior abdominal wall, the largest of which was in the periumbilical region, approximately 30 mm in size and reaching toward the intra-abdominal cavity. On computed tomography, there was a RSH of roughly 95 mm × 55 mm and a wound about 25 mm in diameter on the lateral side of the umbilicus, including hyperdense areas thought to belong to active extravasation. Due to a hemoglobin level decrease, hypotension, and tachycardia, he underwent an emergency laparotomy. On exploration, there was no need to intervene in the RSH. The patient was discharged without complications on the 7th postoperative day.

Keywords: Emergency, hematoma, laparotomies, stab wound

INTRODUCTION

Rectus sheath hematoma (RSH) is one of the causes of acute abdominal pain that develops due to the rupture of the rectus muscle or epigastric vessels. RSH accounts for 2% of unexplained abdominal pain.^[1] Although the most important predisposing factor is anticoagulant therapy, it can also occur due to various reasons such as hematological diseases, trauma, drug injection, physical exercise, coughing, sneezing, pregnancy, and hypertension.^[2] Blunt traumas may rarely cause RSH, and there are only a few case reports of posttraumatic RSH in literature. However, there is no case report except one radiological imaging of RSH due to stabbing.^[3]

After abdominal stab wound trauma, the patient should be referred to a hospital that can provide more coordinated and comprehensive health services quickly. In the evaluation at the emergency department, the first aim is to try to prevent and eliminate sudden and life-threatening situations. The primary assessment is performed following the sequence (ABCDE): Establishing airway patency (Airway), controlling breathing (Breathing), checking circulation (Circulation), assessing

consciousness (Disability), and observing the whole body by removing clothes (Exposure). In patients with shock, isotonic intravenous fluids can be initially administered quickly. Still, blood products are preferred in a 1-to-1-to-1 ratio of red blood cells-to-plasma-to platelets for patients with ongoing fluid requirements and concerns about bleeding.^[4] In hemodynamically unstable patients, emergency laparotomy should be done for injuries reaching the abdominal cavity. In hemodynamically stable patients, imaging tools such as ultrasonography, including focused abdominal ultrasonography for trauma (FAST), or computed tomography (CT), are performed to evaluate all abdominal cavities, including the abdominal walls. Surgery or follow-up should be planned according to imaging methods and physical examination findings of the patient.

Address for correspondence: Prof. Tolga Kalayci,
Department of General Surgery, Agri Ibrahim Çeçen University, Agri, Turkey.
E-mail: dr.tolgakalayci@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Kalayci T. Diagnosis and treatment of medically treated rectus sheath hematoma caused by stabbing. Arch Trauma Res 2022;11:218-21.

Received: 11-09-2022,

Revised: 18-11-2022,

Accepted: 10-01-2023,

Published: 28-02-2023.

Access this article online

Quick Response Code:



Website:
www.archtrauma.com

DOI:
10.4103/atr.atr_55_22

This case report aimed to present the follow-up and treatment process of a case of accompanying RSH in a patient who had an injury reaching the abdominal cavity and was evaluated by diagnostic laparotomy.

CASE REPORT

A 60-year-old man was admitted to the emergency department of a tertiary health center after stabbing himself in suicide in May 2022. He did not have a psychiatric disease, but he had cerebral vascular occlusion followed with clopidogrel 75 mg per day for about 2 years, and diabetes mellitus followed for almost 10 years with oral antidiabetic drugs. The patient who had no history of surgery had last received clopidogrel treatment 1 day ago.

On physical examination at the emergency department, his vital findings were as follows: blood pressure: 128/68 mmHg, pulse rate: 95 beats per min, oxygen saturation on room air: 96%, and body temperature: 36.9° C. There were many entrance holes (more than 10) in the anterior abdominal wall, the largest of which was in the periumbilical region, approximately 30 mm in size and reaching toward the abdomen. Physical examination of the abdomen was unremarkable, including the digital rectal examination. Other system examinations were routine.

In the laboratory, he had a high glucose level (210 mg/dL), an alanine transaminase level (66 U/L), and a lower blood sodium (135 mmol/L) and potassium (3.27 mmol/L) level. His hemoglobin level was 16.2 g/dL. On CT, there was a RSH of approximately 95 mm × 55 mm and a wound about 25 mm in diameter on the lateral side of the umbilicus, including hyperdense areas thought to belong to active extravasation [Figures 1-4].

The patient was hospitalized in the intensive care unit for follow-up. His hemoglobin value was 13.9 g/dL at the 2nd-h laboratory control. At this time of follow-up, his vital findings were as follows: blood pressure: 98/53 mmHg, pulse rate: 118 beats per min, oxygen saturation on room air: 96%, and body temperature: 37.2° C. Diagnostic laparoscopy was planned because the patient had tachycardia and hypotension, decreased hemoglobin value, and a suspected facial defect. On exploration, there was approximately 500 cc of hemorrhage in all cavities of the abdominal cavity, and there were several tears and bleeding foci in the form of leakage due to a knife cut in the peritoneum, and the torn areas were repaired. There was no additional bleeding focus or area of perforation. A drain was put in the pouch of Douglas. The patient was followed up in the intensive care unit in the postoperative period. Oral feeding was opened at the 6th h postoperatively. Hemogram was followed up four times a day. Tranexamic acid 250 mg/5 mL (2 vials per day) and vitamin K1 10 mg/1 mL vial (1 vial per day) was started, and this treatment continued for 3 days. His hemoglobin value decreased to 10.2 g/dL, but a blood product replacement was not required. The patient was transferred to the service on the 4th postoperative day, and the drain was removed on the 5th postoperative day. The patient was

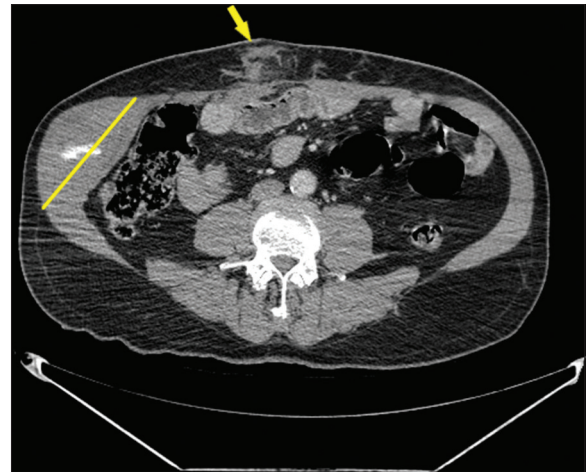


Figure 1: The yellow line indicates the hematoma area, and the yellow arrow indicates the peri-umbilical stab wound area on the axial plane of the CT scan. CT: Computed tomography

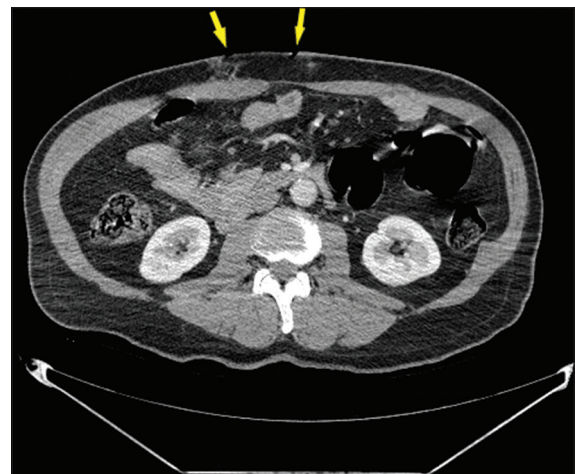


Figure 2: The yellow arrows show stab wound entrances on the axial plane of the CT scan. CT: Computed tomography



Figure 3: The yellow line indicates the hematoma area on the coronal plane of the CT scan. CT: Computed tomography

discharged without complications on the 7th postoperative day. The hematoma size was 40 mm × 30 mm, and the hemoglobin



Figure 4: The yellow arrow indicates the peri-umbilical stab wound area on the sagittal plane of the CT scan. CT: Computed tomography

value was 13.8 mg/dL in the ultrasonography of the patient in the postoperative 1st-month follow-up.

DISCUSSION

This case report is the first literature case in which the diagnosis and treatment process of RSH due to stabbing is presented in detail. Diagnostic laparotomy was applied to the patient due to suspected intra-abdominal extension in the preoperative period and hemodynamic deterioration in the patient's intensive care follow-up. However, surgical intervention was not required for RSH; RSH was treated with medical therapy.

RSH accounts for 2% of unexplained abdominal pain. Possible risk factors are anticoagulant therapy, trauma, rapid and sudden changes in position, recent surgery, acute exacerbation of asthma/chronic obstructive pulmonary disease and cough attacks, injections, and pregnancy. The need for anticoagulant therapy in the COVID-19 outbreak has been a more common clinical situation.^[5] Conversely, RSH cases secondary to trauma are rare and usually result from blunt trauma. In our case, a case of RSH secondary to stabbing and never before presented in literature is presented.

The first step is to prevent and eliminate sudden and life-threatening situations in every trauma patient with or without RSH. After evaluating the trauma patient with the ABCDE sequence, the second step is to assess the organ cavities, especially the abdominal cavity. Abdominal trauma is an insidious clinical picture, and young patients may be asymptomatic until they lose 50%–60% of blood.^[6] Also, it can often be missed in situations that affect the neurological picture, such as head trauma and alcohol. Abdominal trauma examination primarily evaluates the presence of contusion, laceration, abrasion, and penetration. Then, bowel sounds and the presence of abdominal distension are evaluated. Abdominal tenderness and distension may not occur until significant intra-abdominal blood loss. Everything is initially normal in more than 35% of patients, even in significant

intra-abdominal bleeding. Repeated physical examination is essential, and the following patient's serial physical test should be performed for at least 16–24 h.^[7] This examination should be done every 30 min in the first 4 h, every 2–4 h in the next period, and every 4–6 h in the remaining part. The pain due to RSH begins suddenly and is localized around the rectus abdominis muscle, increasing with abdominal movements, coughing, and deep breathing. With the muscles' contraction in the abdomen's anterior compartment, the palpable mass persists and the mass appears more extensive when the patient is lying supine (Fothergill sign).^[8] Approximately 3–5 days after hematoma formation, ecchymosis accompanies the clinical picture. In the present case, a palpable mobile mass without ecchymosis on the right side of the abdomen and a linear wound possibly extended to the abdominal cavity were present. In the finger examination performed from the wound, there was a suspicious intra-abdominal extension, although it was not sure.

After the physical examination, hemogram, biochemistry, blood gas analysis, toxicological analyses, and International Normalized Ratio control should be performed in trauma patients. In addition, beta-human chorionic gonadotropin should be checked in pregnant patients. Hemogram and liver function tests are helpful in the diagnosis of patients with suspected bleeding and solid organ laceration. At the same time, blood amylase levels and creatinine values are essential in pancreatic and urinary system injuries.^[9] In this case, the patient had high glucose and alanine transaminase levels, with lower blood sodium and potassium levels. His hemoglobin level was within normal ranges.

In hemodynamically unstable patients, FAST is a fast and simple method. It can provide valuable information regarding intra-abdominal fluid and solid organ injury. However, the first-line radiological examination in hemodynamically stable patients is direct radiography; thanks to technological developments, every hospital has access to CT, which can be used as trauma patients' first radiological diagnosis tool. CT allows the evaluation of both the intra-abdominal and retroperitoneal spaces, provides information in terms of the presence of organ injuries such as the duodenum and pancreas that are difficult to evaluate via ultrasonography, helps the evaluation of ureteral extravasation, and allows the assessment of the presence and amount of blood in the abdomen if any. CT also gives information about the abdominal walls and can provide information about an extension into the abdominal cavity and additional organ injury, especially in trauma cases.^[9] In this patient, on CT scan, there was a RSH and a wound on the lateral side of the umbilicus, including hyperdense areas thought to belong to active extravasation.

Depending on the patient's vital signs at admission, examination findings, and laboratory and radiology findings, the decision for follow-up or emergency surgery is made. Emergency laparotomy was required in patients with penetrating abdominal injury and external bleeding accompanied by hypotension

and shock, impaired consciousness, sudden abdominal bloating, hemodynamic status not improving despite first fluid resuscitation, and peritoneal irritation findings. In addition, in patients with peritoneal penetration due to a firearm wound in the anterior abdomen, evisceration that cannot be pushed inside the abdominal cavity, extraluminal free air on direct X-ray, diaphragmatic rupture on imaging studies, hyperamylasemia accompanying positive physical examination findings in the abdomen, intraperitoneal rupture of the bladder, and blood in the nasogastric contents or rectal examination, emergency laparotomy is required.^[9] While emergency laparotomy is not required except in the cases described, emergency laparotomy will be necessary for patients who develop the conditions specified in the follow-up examinations. While RSH does not require emergency laparotomy in trauma patients, an intervention should be performed in patients with a prominent bleeding focus during laparotomy for other reasons. The patient's vital signs should also be monitored closely. Each day, the abdomen should be examined, and hemoglobin levels should be checked frequently (every 6 h in the 1st days after diagnosis). If patients have hemoglobin values lower than 7 g/dL, the goal should be to increase the value above this level if possible and maintain it. The need for ES should be evaluated according to the hemoglobin value.^[5] In necessary RSH cases, rapid correction of coagulopathy by giving Vitamin K, fresh frozen plasma, and blood transfusion may be required. Surgery may be needed for hemodynamically unstable patients with extensive hematomas and active bleeding. In our patient, we did not perform an emergency surgery due to RSH. We did the surgery because the patient's hemodynamic status did not improve despite the first fluid resuscitation.

CONCLUSION

The first step in a trauma patient with or without RSH is preventing and eliminating sudden and life-threatening situations. After the first step, if there is an emergency laparotomy indication, emergency laparotomy should be performed quickly. If the patient is hemodynamically stable, additional tests, including hematological evaluation, biochemical evaluation, FAST, and CT, should be done to

prove any abdominal emergency. In case there is a situation that requires emergency surgery in additional examinations, it should be eliminated first, and if there is only a RSH, conservative treatment should be considered primarily. Surgery may be needed for hemodynamically unstable patients with extensive hematomas and active bleeding.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Akıncı E, Gönen M. Rectus sheath rupture and hematoma due to taking the shuttle. *Ankara Med J* 2013;13:97-9.
2. Firoozbakhsh S, Parsaei R, Jafarshad R. Hematoma of rectus sheath following subcutaneous enoxaparin injection. *Acta Med Iran* 2013;51:334-6.
3. Pascoe H. Rectus Sheath Hematoma with Underlying Hepatic Flexure Hematoma Secondary to the Stabbing. Case Study. Available from: <http://Radiopaedia.org>. [Last accessed on 2022 Jul 05].
4. Ley EJ, Clond MA, Srour MK, Barnajian M, Mirocha J, Margulies DR, *et al*. Emergency department crystalloid resuscitation of 1.5 L or more is associated with increased mortality in elderly and nonelderly trauma patients. *J Trauma* 2011;70:398-400.
5. Kalayci T. Rectus sheath hematoma due to low molecular weight heparin in a COVID-19 patient in Turkey. *Cureus* 2021;13:e14870.
6. Isenhour JL, Marx J. Advances in abdominal trauma. *Emerg Med Clin North Am* 2007;25:713-33, ix.
7. Feliciano DV. Abdominal trauma revisited. *Am Surg* 2017;83:1193-202.
8. Hatjipetrou A, Anyfantakis D, Kastanakis M. Rectus sheath hematoma: A review of the literature. *Int J Surg* 2015;13:267-71.
9. Lotfollahzadeh S, Burns B. Penetrating abdominal trauma. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing; 2021. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK430685/>. [Last accessed on 2022 Jul 05].