JBACHS
Journal of Basic and Clinical Health Sciences

J Basic Clin Health Sci 2020; 4:391-393
https://doi.org/10.30621/jbachs.2020.1050

Case Report

Spleen Rupture Due to Anticoagulant Use: A Case Report

Mehmet Ulusahin[1], Kadir Tomas[2], Mehmet Arif Usta[3], Arif Burak Cekic[3], Serdar Turkyilmaz[3]

[1]İdil State Hospital, General Surgery Clinic, Şırnak, Turkey
[2]Recep Tayyip Erdoğan University, Training and Research Hospital, General Surgery Clinic, Rize, Turkey
[3]Karadeniz Technical University Faculty of Medicine, Farabi Hospital, Department of General Surgery, Trabzon, Turkey

Address for Correspondence: Mehmet Ulusahin, **E-mail:** ulusahinmehmet@hotmail.com
Received: 02.04.2020; **Accepted:** 17.06.2020; **Available Online Date:** 15.10.2020

Cite this article as: Ulusahin M, Tomas K, Usta MA, Cekic AB, Turkyilmaz S. Spleen Rupture Due to Anticoagulant Use: A Case Report. J Basic Clin Health Sci 2020; 4:391-393.

ABSTRACT

Spleen rupture caused by anticoagulant drug use is a rare but potentially fatal condition. Co-existence of oral anticoagulant use and complaint of abdominal pain must remind diagnosis of spleen rupture. In this paper, we aimed to present a case of spleen rupture identified in a patient with history of heart valve replacement and concomitant oral anticoagulant use. A 44-year old male patient admitted to emergency service with complaint of abdominal pain sustained for 12 hours. There was no history of trauma. A subcapsular hematoma sized 9x8 cm in spleen and perihepatic fluid were identified in computerized tomography (CT) examination. There was no active bleeding in abdominal CT angiography; however, emergent surgery was planned for patient due to impaired hemodynamic balance and decreasing hemoglobin level. In laparotomy, extensive hemorrhagic fluid in abdomen and active bleeding in spleen were present. Spleenectomy was performed. Patient was discharged at postoperative 5th day without a serious problem during postoperative monitoring. Spleen rupture is a rare condition in patients with anticoagulant use. Lack of trauma history may mislead clinican and may delay diagnosing. Early and accurate diagnosis is critical for patient.

Key words: spleen, rupture, abdominal pain, subcapsular hematoma, atraumatic, anticoagulation

INTRODUCTION

Spontaneous spleen rupture is a rare condition. Most common causes are hematologic malignancies and infections (1, 2). Anticoagulants, granulocyte-colony stimulating factors, thrombolytic agents, tissue plasminogene activator, streptokinase, antifibrinolytic treatment, thrombolytic treatment and dialysis have been known as causing spontaneous spleen rupture (1–7). Chronic hepatitis, amyloidosis and pancreatitis have also been known as causing spontaneous spleen rupture (8, 9). There have been cases named idiopathic splenic rupture without any identifiable etiology (8, 10). Spleen rupture is tended to occur less in new drugs like Factor Xa inhibitors than classic anticoagulant drugs (1). Knowledge related with its incidence and etiology is very limited.

CASE REPORT

A 44-year old male patient admitted to emergency service with complaint of abdominal pain persisted for 12 hours. In first evaluation in emergency service, his arterial tension was 85/55 mmHg and heart rate was 95/min. In abdominal examination, tenderness which was especially apparent on left upper quadrant was present. His pain was present for approximately 12 hours with fluctuations. In medical history, he had a history of mitral valve replacement 15 years ago and interventional procedure for abdominal aorta aneurysm 2 month ago. Patient had been used oral anticoagulant with suggestion of cardiology department and he was coherent with its follow-ups. There was no history of trauma. Hemoglobulin was 12.5 gr/dL, leucocyte count was 8300/mm^3, thrombocyte count was 137000/mm^3, INR (International Normalized Ratio) value was 3.22, PT (Prothrombin Time) was 33.4 sec, aPTT (activated partial thromboplastin time) was 41.8 sec in laboratory test performed at patient admission. Other laboratory values were in normal range. Abdominal computerized tomography (CT) and abdominal CT angiography were performed after normalizing tension values of patient with fluid replacement. Active bleeding was not identified in abdominal CT angiography. A subcapsular hematoma sized approximately 9x8 cm in spleen was identified in abdominal CT. Control hemoglobulin values which were worked with 2-hour interval were 10.6 and 8.0 gr/dL; respectively. 2 units of erythrocyte suspension and 2 units of fresh frozen plasma were administered to patient in this period. Operation was planned due to progression of hypotension and tachycardia and rapid haemoglobin decrease. Approximately 2

Figure 1. Appearance of perisplenic hematoma in abdominal CT.

liters of hemorrhagic fluid in abdomen and active bleeding along with grade 3 laseration in spleen were identified in emergently performed laparotomy. Spleen was excised by ligating splenic artery and vein after liberating ligaments of spleen. Patient was post-operatively transferred to general surgery service. There was no problem during monitorization except atelectasis. Patient was evaluated by cardiology department and his medications were revised. Patient was discharged at postoperative 5th day.

DISCUSSION

Spontaneous spleen rupture is a rare and potentially fatal condition. Its pathophysiology is still not completely understood (10). Although there is no definitive evidence, it has been thought that splenic infarct, coagulopathy and parenchymal congestion occurred in microscopic level due to different reasons may cause rupture (11, 12). Drugs used for anticoagulation may also cause spontaneous spleen rupture or bleeding (4, 11, 13). It has been shown that spleen rupture due to medication consist of 9.1% and 33% of spontaneous spleen ruptures in two studies, respectively (8, 14).

Most common complaint of admission in patients admitted with spontaneous spleen rupture or bleeding due to anticoagulant drug use is abdominal pain (1, 10, 11). This is frequently accompanied by hypotension or tachycardia. Abdominal pain may reflect on left shoulder due to diaphragmatic irritation (Kehr's sign) (11). Considering splenic rupture along with other causes of abdominal pain is important in these patients. History of trauma or medication must be thoroughly questioned. Lack of history of trauma may be misleading for clinicians and may cause delayed diagnosis and mortality (6, 8). Probability of spleenic rupture must be kept in mind in patients with co-existence of anticoagulant use and abdominal pain (2). Low haemoglobin levels or abnormalites on INR, PT, aPTT values may be present in performed laboratory tests. Abdominal ultrasonographic (USG) examination and abdominal CT are very valuable in diagnosis. Examinations except USG may be a waste of time in hemodynamically-unstable patients; therefore caution is necessary. Both abdominal USG and abdominal CT can identify hematoma or rupture in spleen or intraabdominal hematoma (10). Abdominal CT angiography may be diagnostic in patients with active bleeding. In our patients, abdominal CT and abdominal CT angiography were performed and no active bleeding origin was identified in patient with sub-capsular hematoma.

There is no widely accepted algorhytm for treatment. Emergent laparotomy must be performed in hemodynamically-unstable patients (1, 5, 10, 14). Conservative treatment is a good option for hemodynamically-stable patients with no neoplasia in etiology; however, 17% of patients undergo spleenectomy due to secondary bleeding (10, 14, 15). In a study, mortality rate in spontaneous spleen rupture cases followed conservatively was reported as 4.4% (14). Splenic artery embolization may be tried in centres with interventional radiologic capabilities (14). However, it has been reported that success rates of non-operative approach and embolization procedures are not too high in atraumatic splenic rupture cases (8.14). In this presented case, medical treatment was tried as first-line treatment. However, emergent laparotomy was planned due to decreasing haemoglobin levels in spite of blood replacement and progression of tachycardia and hypotension during monitoring. Spleenectomy was performed in patient with 2 liters of hemorrhagic fluid in abdomen, grade 3 laseration and active bleeding in spleen.

CONCLUSION

Spleen rupture or bleeding due to anticoagulant use is a rare but serious condition. This clinical entity must be kept in mind in patients with abdominal pain and anticoagulant use without a history of trauma. Conservative treatment, interventional procedures or surgical treatment are available and most appropriate one must be chosen according to the hemodynamic status of patient.

Informed Consent: Written informed consent was obtained from the patient who participated in this case.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - MU, KT, MAU, ABC, ST; Design - MU, KT, MAU, ABC, ST; Supervision - MU, KT, MAU, ABC, ST; Fundings - MU, KT; Materials - MU, MAU; Data Collection and/or Processing - MU, KT, MAU, ABC, ST; Analysis and/or Interpretation - MU, KT, MAU, ABC, ST; Literature Search - MU, KT, ABC; Writing Manuscript - MU, ST; Critical Review - MU, KT, MAU, ABC, ST

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

Presented in: This paper had been presented as a poster in 13th Turkish Hepatopancreatobiliary Surgery Congress which was held at Antalya/Turkey between November 1–4, 2017.

REFERENCES

1. Lowry LE, Goldner JA. Spontaneous splenic rupture associated with apixaban: A case report. J Med Case Rep 2016;10:217. [CrossRef]
2. Aubrey-Bassler FK, Sowers N. 613 cases of splenic rupture without risk factors or previously diagnosed disease: a systematic review. BMC Emerg Med 2012;12:11. [CrossRef]
3. Kapan M, Kapan S, Karabicak I, Bavunoglu I. Simultaneous rupture of the liver and spleen in a patient on warfarin therapy: report of a case. Surg Today 2005;35:252–255. [CrossRef]
4. Burg MD, Dallara JJ. Rupture of a previously normal spleen in association with enoxaparin: an unusual cause of shock. J Emerg Med 2001;20:349–352. [CrossRef]
5. Gedik E, Girgin S, Aldemir M, Keles C, Tuncer MC, Aktas A. Non-traumatic splenic rupture: report of seven cases and review of the literature. World J Gastroenterol 2008;14:6711–6716. [CrossRef]
6. Sirbou R, Tissier C, Bejot Y, Freysz M. Spontaneous splenic rupture after thrombolysis for ischemic stroke. Am J Emerg Med 2015;33:478.e3–478.e4. [CrossRef]
7. Genthon A, Frasure S, Kinnaman K, Huang C, Noble V. Bedside ultrasound diagnosis of a spontaneous splenic hemorrhage after tissue plasminogen activator administration. Am J Emerg Med 2014;32:1553.e1–1553.e2. [CrossRef]
8. Kocael PC, Osman S, Bilgin IA, et al. Characteristics of patients with spontaneous splenic rupture. Int Surg 2014;99:714–718. [CrossRef]
9. Cengiz F, Yakan S, Enver I. A rare cause of acute abdomen: Splenic hematoma and rupture resulting from pancreatitis. Turk J Surg 2013;29:81–83. [CrossRef]
10. Hadary A, Dashkovsky I, Rapaport A, Cozakov JC. Non-traumatic rupture of spleen: Can splenectomy be applied selectively? Isr Med Assoc J 2008;10:889–891. https://www.ima.org.il/MedicineIMAJ/viewarticle.aspx?year=2008&month=12&page=889
11. Reches A, Almog R, Pauzner D, Almog B, Levin I. Spontaneous splenic rupture in pregnancy after heparin treatment. BJOG 2005;112:837–838. [CrossRef]
12. Rhee SJ, Sheena Y, Imber C. Spontaneous rupture of the spleen: a rare but important differential of an acute abdomen. Am J Emerg Med 2008;26:733.e5–733.e6. [CrossRef]
13. Weiss SJ, Smith T, Laurin E, Wisner DH. Spontaneous spleen rupture due to subcutaneous heparin therapy. J Emerg Med 2000;18:421–426. [CrossRef]
14. Renzulli P, Hostettler A, Schoepfer AM, Gloor B, Candinas D. Systematic review of atraumatic splenic rupture. Br J Surg 2009;96:1114–1121. [CrossRef]