CASE REPORT

Hemoperitoneum secondary to intercostal arterial bleeding in a trauma patient

K. Laeeq*, S. Cheung, and B. Phillips

Department of Surgery, Department of Clinical Science and Translational Research, Creighton University School of Medicine, Omaha, NE, USA

*Correspondence address. Creighton University Medical Center, 301 North 30th Street, Omaha, NE 68131, USA. Fax: +1-402-717-6068; E-mail: kulsoomlaeeq@creighton.edu

Abstract

Blunt trauma resulting in rib fractures can be associated with hemothorax, pneumothorax, pulmonary contusions or less frequently chest and abdominal wall hematomas. Our case describes the first report of hemoperitoneum secondary to intercostal arterial bleeding from blunt trauma in a patient on anticoagulation.

INTRODUCTION

Blunt trauma resulting in multiple rib fractures can be associated with intercostal bleeding [1]. There are multiple reports of intercostal arterial bleeding resulting in abdominal wall hematomas [2] and hemothorax [1] that require embolization [3] or even thoracotomy [4]. To our knowledge however, this is the first description in the literature demonstrating hemoperitoneum from intercostal arterial bleeding requiring laparotomy.

CASE REPORT

A 59-year-old male presented to our trauma center after sustaining a fall while transferring from a chair to wheelchair. He was on dabigatran for treatment of deep vein thrombosis in both lower extremities. His past medical history also included coronary artery disease, chronic kidney disease and a cerebral vascular accident. In the trauma bay, he reported left chest and left upper quadrant abdominal pain. On physical examination he was hemodynamically stable but tender to palpation over the left ninth and tenth ribs along the mid-axillary line. A Computed Tomography (CT) scan of the abdomen and pelvis with intravenous contrast demonstrated a large expanding left lateral chest wall hematoma, which appeared to be dissecting into the abdominal wall and peritoneum. Active contrast extravasation originating from an intercostal artery (Fig. 1) was associated with intraperitoneal blood in the perisplenic region and left paracolic gutter (Fig. 2). A selective angiogram of multiple left intercostal arteries and the deep circumflex iliac branch of the left external iliac artery did not show any active contrast extravasation. The patient was admitted to the intensive care unit for close monitoring and administered idarucizumab (praxbind) for reversal of his anticoagulation. Eight hours later, he developed worsening abdominal pain and became hemodynamically unstable with a systolic blood pressure of 80 mmHg. An exploratory laparotomy was then performed through a left subcostal incision. Upon entry into the peritoneal cavity 500 ml of clot was evacuated. A significant hematoma in the lateral abdominal wall just under the lower ribs had caused a tear in the peritoneum leading to the intraperitoneal blood. Active arterial bleeding could not be appreciated however a small amount of continuous bleeding from the left abdominal wall was controlled with suture plication. The patient received two units of packed red blood cells during the operation and was stable in the immediate postoperative setting. He was restarted on dabigatran on post-operative day four. His post-operative course was otherwise unremarkable and he was discharged home after five days.

Received: September 14, 2016. Accepted: January 12, 2017

Published by Oxford University Press and JSCR Publishing Ltd. All rights reserved. © The Author 2017.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (http://creativecommons.org/licenses/by-nc/4.0/), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact journals.permissions@oup.com
reverse our patient incidence of 7.1% \[5\]. Transcatheter arterial embolization (TAE) or surgical exploration \[1, 4\]. TAE has been reported as a safe and reliable technique in the management of blunt intercostal arterial injury associated with clinical deterioration \[1\]. In our patient, TAE was undertaken shortly after his arrival to our trauma center but did not reveal an active source of bleeding.

Surgical exploration should be considered with failure of angioembolization or when interventional radiology is not available. Strategies for operative exploration are dependent on the clinical scenario, hemodynamic stability, and the impact of associated injuries. In our case, a left-sided subcostal incision allowed access superiorly to the involved intercostal artery as well as inferiorly to evacuate the hematoma. Surgical plication of the suspected area was conducted and the tear in the peritoneum was repaired during our fascial closure. At the end of the operation satisfactory hemostasis was achieved and we did not feel the need to place a drain.

In conclusion, hemoperitoneum secondary to intercostal arterial bleeding is an uncommon clinical finding. This can be managed with angioembolization if resources are available. Immediate reversal of medically-induced coagulopathy is also indicated. In patients with hemodynamic instability, expanding hematoma, or active contrast extravasation that cannot be embolized, surgical exploration should be entertained.

CONFLICT OF INTEREST STATEMENT
None declared.

REFERENCES
1. Chemelli AP, Tahuere M, Wiedermann F, Strasak A, Klocker J, Chemelli-Steingruber IE. Transcatheter arterial embolization for the management of iatrogenic and blunt traumatic intercostal arterial injuries. J Vasc Surg 2009;49:1505–13.
2. Inoue T, Iwamoto T, Setsuna Y. Lateral abdominal wall hematoma due to blunt intercostal arterial injury in a patient with serious comorbidities. J Em Med 2013;47:125–7.
3. Nemoto C, Ikegami Y, Suzuki T, Tsukada Y, Abe Y, Shimada J, et al. Repeated embolization of intercostal arteries after blunt chest injury. Gen Thorac Cardiovasc Surg 2013;62:696–9.
4. Igai H, Okumora N, Ohata K, Matsuoka T, Kameyama K, Nakagawa T. Rapidly expanding extrapleural hematoma. Gen Thorac Cardiovasc Surg 2008;56:515–7.
5. Chung JH, Carr RB, Stern EJ. Extrapleural hematomas: imaging appearance, classification, and clinical significance. J of Thoracic imaging 2011;26:218–23.
6. Ishida A, Hiraoka A, Chikazawa G. Spontaneous intercostal arterial rupture restrained by conservative management. Ann Vasc Dis 2014;7:430–32.
7. Connolly S, Ezekowitz M, Yusuf S, Eikelboom J, Oldgren J, Parekh A, et al. Dabigatran versus Warfarin in patients with Atrial Fibrillation. NEJM 2009;361:1139–51.
8. Pollack C, Reilly P, Eikelboom J, Glund S, Verhamme P, Bernstein RA, et al. Idarucizuman for Dabigatran Reversal. NEJM 2015;373:511–20.