Received: February 18, 2022
Accepted: May 31, 2022

Acad Med J 2022;2(1):159-162
UDC: 616-001.44
DOI: 10.53582/AMJ2221159v
Case report

PUNCTURE INJURY IN THORACOLUMBAR REGION

Volcevski Goce[1], Mihajloski Vladimir[1], Krstevski Stefan[2], Ognjenovic Ljubomir[1], Shumkovski Aleksandar[1], Trajkovski Gorgi[1], Joksimovic Vladimir[1]

[1]University Clinic of Digestive Surgery, Faculty of Medicine, Ss. Cyril and Methodius University in Skopje, Republic of North Macedonia
[2]City General Hospital 8th September, Republic of North Macedonia
e-mail: volcevski@yahoo.com

Abstract

Puncture injuries made by a knife are common injuries which occur during close interpersonal conflicts. We present a case of a 28-year-old patient with puncture injury made by a knife with long edge in the left thoracolumbar region, between the eighth and ninth rib.

Keywords: spleen, knife, puncture injury, penetrating injury

Introduction

Injuries made by a knife are the most common causes of mortality and morbidity worldwide that happen during close interpersonal conflicts[1]. A knife wound can have a distinct pattern, particularly when the wound is a penetrating wound or a puncture. Although puncture wounds don't normally bleed heavily, they're prone to infection. The wound can cause external and internal bleeding. Puncture wounds that cause excessive blood loss or those that damage the organs can be fatal[1-3].

We present a case of a nonfatal left penetrating thoracolumbar injury made by a big knife with long edge.

Case Report

A 28-year-old patient was brought to the Emergency Surgery Center with a puncture injury made by a knife with long edge in the left thoracolumbar region between the eighth and ninth rib, in the eighth intercostal space. The patient was admitted two hours after the injury was made. On admission he had stable vital signs and parameters. A computed tomography of the abdomen with intravenous contrast was immediately done and signs of a small free fluid collection were verified in the area of the spleen and left kidney, however without signs of injury on the left cupola of the diaphragm (Figure 1). The patient was admitted to the University Clinic for Anesthesia, Resuscitation and Intensive Medicine (UCARIM), at the Intensive Care Unit, for observation, intensive care and reanimation. His vital signs on admission were TA = 140/90 mmHG, pulse 80/min. The physical examination showed a puncture injury between the eighth and ninth rib in the left thoracolumbar region without active bleeding. The abdomen was soft and painless. The urine was clean without signs of hematuria. On the second day at UCARIM, there was an extreme decrease of patient's tension to 90/60 mmHg, tachycardia 111/min, tachypnea and reduction of hemoglobin from 150 g/L to 80g/L. The ultrasonography showed a greater amount of free fluid in all abdomen quadrants and interintestinally. An indication for urgent surgical treatment was made.

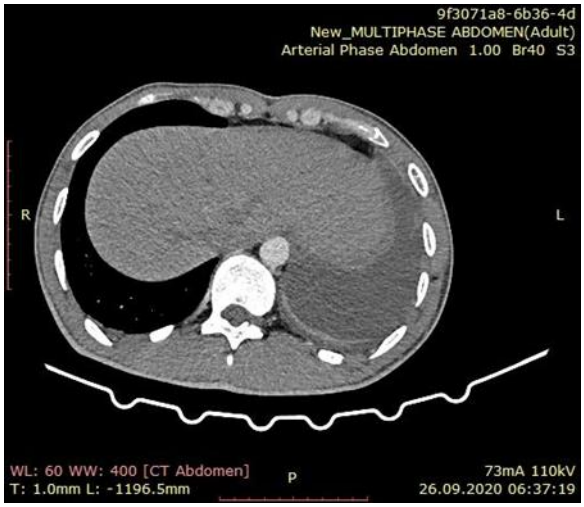

Fig. 1. CT of the abdomen and thorax before admission. Free fluid below the left diaphragm and interruption of the diaphragm continuity can be observed.

Medial laparotomy was made revealing a large quantity of (about 2 liters) hematemised content. Active bleeding from IX intercostal artery was detected (the leading cause for the large quantity of blood in the abdomen), then injury of diaphragm of 6 cm and puncture injury of spleen hilum of 7 cm which at the moment of the intervention did not bleed. Also, a large retroperitoneal hematoma in the vicinity of the upper pole of the left kidney with size of 15 x 20 cm was detected. The suture of intercostal artery was performed and the active bleeding was stopped. When the patient's blood and blood components filling were stabilized, once again bleeding of the spleen was identified after which splenectomy was done. Then, suture of the diaphragm cupola was made and thoracic drainage from the left side was placed. Retroperitoneal hematoma did not increase and there were no obstacles in urodynamics and hematuria. As there were no signs of injury on the other organs in the abdomen, it was decided to monitor the patient without any active surgical treatment. Abundant lavage was performed and three abdominal drainages were placed. The patient was transferred to UCARIM for intensive treatment, and monitoring began after which the patient with stable vital parameters was transferred to one of the wards. The abdominal drains were removed on the sixth postoperative day. Chest x-ray was made and thoracic drain was removed. The patient started to have normal meals. On the eighth postoperative day, he had melena and decrease in tension and hemoglobin levels, which was an indication for gastroscopy. Two ulcers on the posterior wall of duodenum apex were identified and they were infiltrated with adrenaline. The patient was stabilized with three blood and blood components doses. Two days later there were signs of old melena, which was an indication for control gastroscopy and reevaluation of the ulcers. They showed no signs of acute bleeding, but there were signs of ulcers' healing (ulcus bulbi duodeni pars dorasli Forest III) ulcus post bulbaris Forest IIC). The patient was discharged on the nineteenth postoperative day with prescribed therapy (Omeprazole).

Discussion

The knife is the most commonly used weapon causing penetrating injuries in the region of thorax and abdomen[1-3]. The strength needed for the knife to penetrate very much depends on many factors but mostly on its sharpness, so the sharp pointed knives are most frequently used in attempted murders[1]. Usually in cases of penetrating injures made by a knife, the weapon is found near the scene of the crime or it is left at the injury spot. Removing of the knife from the chest may result in massive bleeding, hemodynamic deterioration and instant victim's death. Therefore, it is recommended to remove penetrating

Fig. 2. Final closure of the abdomen

objects from the chest wall in the operating room[4-9]. In the case presented here, neither the knife was found nor the wounded patient had any information about its size which very much complicated the assumption for the injury made. What is specific for this case is the fact that on admission of the patient to the Emergency Center, there was no classic bleeding and serious disorder of the vital parameters and then, after 15 hours had passed, there was a massive bleeding and destabilization of the hemodynamic condition. In injuries of this type, massive bleeding is expected from the wound itself and the wounded organs. In addition, x-ray and CT examinations showed no signs of hemorrhage or air in the left hemithorax, which can be explained with different pressure in abdominal and thoracic cavity accompanied with an open wound in the pleura and diaphragm cupola.

Conclusion

Each wound made by a knife should be examined individually and the approach for treatment should be multidisciplinary.

Conflict of interest statement. None declared.

References

1. Novakov I. Thoracic Stab Wound: A Curious Case Report. Clinics in Surgery - Thoracic Surgery. available from: http://www.clinicsinsurgery.com/open-access/thoracic-stab-wound-a-curious-case-report-3608.pdf published 01. Nov 2018.
2. Revell M, Pugh M, Mcghee M. Gastrointestinal Traumatic Injuries: Gastrointestinal Perforation. *Crit care Nurs Clin North Am* 2018; 30(1): 157-166, doi: 10.1016/j.cnc. 2017.10. 014 .
3. Jaykar RD, Ubale BP, Aher Manoj, Wagh Rahul. Abdominal gunshot injury – a rare case report. *JEMDS* 2013; 2(49): 9485-9488.
4. Cannon JW, Khan MA, Raja AS, *et al*. Damage control resuscitation in patients with severe traumatic hemorrhage.A practice management guideline from the Eastern Association for the Surgery of Trauma. *J Trauma Acute Care Surg* 2017; 82(3): 605-617. doi: 10.1097/TA.0000000000001333.
5. Feliciano D, Moore E, Biffl W. Management of abdominal vascular trauma. *J Trauma Acute Care Surg* 2015; 79(6): 1079-1088, doi: 10.1097/TA.0000000000000869.

6. Muchuweti D, Muguti E. Penetrating thoracoabdominal injuries from multiple-spiked spear stabbing: Case report and literature review. *Clin Case Rep* 2020; 8: 1002-1006. doi: 10.1002/ccr3.2809.
7. Griffiths E, Mohamed A, Ball C. Right thoracoabdominal stab injury penetrating the liver and gallbladder: lessons in penetrating knife wounds to the chest and abdomen. *BMJ Case Rep* 2010; 2010: bcr0120102609. doi: 10.1136/bcr.01.2010.2609.
8. Morales C,Villegas M, Angel W, *et al*. Value of Digital Exploration for Diagnosing Injuries to the Left Side of the Diaphragm Caused by Stab Wounds. *Arch Surg* 2001; 136(10): 1131-1135. doi: 10.1001/archsurg.136.10.1131.
9. Shatney C, Koji S, Lori M. The natural history of stab wounds of the diaphragm: Implications for a new management scheme for patients with penetrating thoracoabdominal trauma. *Am Surg* 2003; 69(6): 508-513. PMID: 12852509.