

Intra-abdominally retained knife following lower thoracic stab wound: a potential hazard

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Abstract

A patient presenting with a left thoracic stab wound causing pneumothorax and treated with a chest tube is presented. A chest X-ray barely revealed the base of an unsuspected, completely retained intra-abdominal knife. Although the elimination of routine abdominal X-ray in the evaluation of patients with abdominal and lower thoracic stab wounds has been recommended, attention should be given to the fate of the stabbing implement and in unclear cases plain X-ray should be obtained to detect completely retained and potentially hazardous stabbing implements.

Case history

A 51-year-old man was brought to a hospital emergency room after being stabbed in the left side of the chest. On admission, he was conscious with a blood pressure of 95/50, heart rate of 130/minute and oxygen saturation of 95%. The patient complained of abdominal pain. There was no information about the type and location of the knife itself. Physical examination revealed a 5cm long stab wound at the left V/VI intercostal area at the mid-axillary line. Chest X-ray showed a pneumothorax on the left side and ultrasound examination was positive for fluid in the pelvic area but otherwise normal.

A chest tube was inserted to the left side producing small amounts of air and blood. Closer examination of the chest X-ray showed a metallic foreign body below the left diaphragm which on subsequent plain abdominal X-ray was identified as a completely retained knife with its base below the left diaphragm and pointing obliquely towards the right side with the cutting edge cranially. In addition, the X-ray showed the presence of extraluminal air in the abdominal cavity. At emergency laparotomy, the knife was removed, two through-and-through perforations and a left diaphragmatic laceration were sutured and four superficial lacerations in the liver were noted. At left-sided thoracotomy, the pleural cavity was cleaned of stomach contents and a wound to the left lower lobe of the lung was debrided. Postoperative abscesses in the left pleural space and pelvis were drained percutaneously and the patient was discharged on the 21st postoperative day.

Diagnosis

Plain abdominal X-rays to reveal possible extraluminal air in the peritoneal cavity in stable patients with abdominal and lower thoracic stab wounds are routinely included in the diagnostic work up in most centres (1, 2) whereas it is not included in others (3). One study recommended the elimination of routine X-rays in the evaluation of these patients based on their poor cost effectiveness (4). Additional support for the elimination of plain abdominal X-rays from the evaluation of abdominal stab wounds include the relatively low positive and negative predictive values of extraluminal air in predicting the presence of a significant intra-abdominal organ injury (5).

Unusual features

Retained stabbing implements are seldom encountered in patients with stab wounds and are usually carefully removed during operation. Unsuspected and completely retained intra-abdominal stabbing implements have, to the author's knowledge, not been reported in the literature.

In this case, the stab wound was located in the left lower chest and there was no information regarding the fate of the knife. Although the base of the knife could be seen in the chest X-ray leading to further investigations and early laparotomy, management of the pneumothorax with chest tube only could have lead to a significant delay in detecting the intra-abdominal injuries. During this time, the potential hazard of having a sharp object freely moving in the abdominal cavity was significant with high risk of additional injuries to the liver or major vessels. The minor liver injuries in this patient were most likely caused by the retained knife after the initial assault.

Lesson

In the evaluation of patients with abdominal or lower thoracic stab wounds, attention should be given to the fate of the stabbing implement. In unclear cases, plain X-rays are justified to detect or exclude a completely retained intra-abdominal knife potentially causing additional injuries if not promptly removed during emergency operation.

References

1. Robin A, Andrews J, Lange D, Roberts R, Moskal M, Barrett A. Selective management of anterior abdominal stab wounds. *J Trauma* 1989; **29**: 1684–1689.
2. Taviloglu K, Gunau K, Ertekin C, Calis A, Turel O. Abdominal stab wounds The role of selective management. *Eur J Surg* 1998; **164**: 17–21.
3. Zubowski R, Nallathambi M, Ivatury R, Stahl W. Selective conservatism in abdominal stab wounds: The efficacy of serial physical examination. *J Trauma* 1988; **28**: 1665–1668.
4. Kester D, Andrassy R, Aust J. The value and cost effectiveness of abdominal roentgenograms in the evaluation of stab wounds to the abdomen. *Surg Gynecol Obstet* 1986; **162**: 337–339.
5. Leppäniemi A, Voutilainen P, Haapiainen R. Indications for early mandatory laparotomy in abdominal stab wounds. *Br J Surg* 1999; **86**: 76–80.