

eComment. Initial workup and decision-making regarding coexistence of massive haemothorax and haemopericardium

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We read with great interest the article 'Right massive haemothorax as the presentation of blunt cardiac rupture: the pitfall of coexisting pericardial laceration' by Chen *et al.* [1]. This well-presented case highlights a dual emergency and its successful approach. The discussion section, however, includes a number of possible causes that may be responsible for blunt traumatic haemothorax, without mentioning injury of the diaphragm. Traumatic diaphragm injury accounts for almost 3.3% of blunt trauma cases [2].

Three years ago, we faced and reported a rare case of haemothorax due to blunt injury in a patient with hereditary rib exostosis that caused diaphragm penetration [3]. Several other case reports consider not only traumatic diaphragm rupture, but also vascular damage by pressure trauma as an aetiological factor for haemothorax. In addition, there are cases where the disrupted spleen is herniated through the diaphragm in the thorax, causing a haemothorax. Therefore, massive haemothorax should not always focus attention to the chest and intrathoracic causes of haemodynamic instability. If such injuries are not recognized and approached properly, potential for survival is limited.

According to the latest guidelines, ultrasound can reliably be used to identify and measure pleural or pericardial effusion, while computed tomography (CT) of the chest is indicated in patients with persistent opacity on chest radiograph after tube thoracostomy [4]. In our case there was no massive bleeding, and our initial imaging workup consisted of a chest X-ray and an ultrasound scan. Decisive diagnosis, however, was obtained after a chest CT scan, which indicated surgical treatment via an anterolateral mini-thoracotomy. Since patients with traumatic lesions and haemorrhagic pleural effusion usually have multiple bleeding sources, contrast-enhanced CT is generally considered necessary to identify the bleeding points, document their anatomic relationships, detect extravasation of contrast agent, and reveal any additional organ injury. Current studies on massive haemothorax, however, suggest that patient's physiology should be the primary indication for surgical intervention, and advocate thoracotomy, regardless of the mechanism of injury [4]. On the other hand, in case of haemopericardium, most reports are in favour of sternotomy [5]. This article presents a rare coexistence of massive haemothorax and haemopericardium. Is it correct to proceed with a thoracotomy based on clinical evidence and patient's physiology without a CT scan? Is median sternotomy a better operative option regarding this dual entity? According to the Authors, the subxiphoid approach shifted to median sternotomy immediately because of catastrophic haemorrhage from pericardial window. Should they have avoided the subxiphoid window and performed a posterolateral thoracotomy right after focus assessment sonography?

In order to answer these questions, an algorithm of initial imaging and interventional workup must be established. We look forward to reading further analyses on the subject.

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eComment. Prompt decision making on the site of surgical approach in patients with chest trauma-a brief communication

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We read with great interest the article by Chen *et al.* [1]. Haemothorax is an important finding in trauma patients, which may either be a self-limited condition or the evidence of a life-threatening injury to the thoracic or abdominal organs. We have encountered an extremely rare case of type B dissection in which the first finding was a right-sided haemothorax [2]. Considering the case presented by Chen *et al.*, we would like to figure out the importance of the type and site of the surgical incision. In our experience, if the echocardiography does not reveal any significant cardiac injury or pericardial effusion in such a trauma patient, the easiest and safest approach is a lateral thoracotomy at the fifth intercostal space. This approach helps discriminate intra- and extra-thoracic etiologies of bleeding in such a patient. In case of a cardiac laceration or cardiopulmonary arrest, access to the heart or cannulation of the aorta and right atrium for the utilization of cardiopulmonary bypass is easy with or without a hemi-clamshell extension of the incision. The presented case could be a major pulmonary vessel branch or intercostal artery injury leading to massive right haemothorax in which the subxiphoid pericardial window or a full sternotomy will have a limited use, but a waste of time during an active bleeding. Even the cause of the right haemothorax is a cardiac injury; an uncontrolled subxiphoid access may lead to acute decompression and cardiopulmonary arrest as presented in this case. In this patient, considering the negative echocardiographic findings for a significant pericardial effusion, the mentioned surgical algorithm does not target the most frequent causes of a massive right haemothorax. In such cases we prefer a lateral thoracotomy with a hemi-clamshell extension towards midline when necessary. Such patients require prompt evaluation and surgical intervention is lifesaving in most of the cases.

References

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