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Life-threatening spontaneous hematoma of the chest wall treated with packing and delayed chest closure

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Introduction

Bleeding of the thoracic and abdominal wall most commonly occur in anticoagulated patients [1]. The management is based on anticoagulant therapy reversal which is mostly effective [2]. If conservative treatment is insufficient, good results are provided by endovascular embolization techniques [2,3]. The need of surgical intervention is extremely rare and limited to cases in which minimally invasive techniques are unsuccessful or somehow contraindicated [4].

Case Report

We present the case of a 58-year-old male, affected by hepatic cirrhosis (CHILD C) admitted in Intensive Care Unit with a spontaneous bacterial peritonitis and signs of shock. The patient had severe coagulopathy (spontaneous INR 2.4) and was haemodynamically unstable (arterial pressure 66/48 mmHg), requiring maximal supportive therapy with fluid restoration and vaso-active agents. Abdominal ultrasound and chest x-ray performed at admission resulted as normal. Hemoglobin was 96 g/L and a gastroscopy was performed in order to rule out any gastrointestinal bleeding.

Within few hours the hemoglobin concentration dropped to 64 g/L and patient received 5 units of red blood cell, coagulation factors and platelets. In the meantime a swelling of the right chest wall gradually appeared and rapidly increased in size (Figure 1). A thorax-abdomen CT scan was performed showing a huge hematoma of the right hemithorax with a moderate amount of pleural effusion; the source of bleeding appears to be a small right dorso-lateral muscular artery (Figure 2,3). Despite transfusions and hematoma compression, the patients were requiring greater amount of vaso-active support and an emergency surgical exploration was considered mandatory. A large amount of fresh blood mixed with clots

(2000cc) was found between the serratus anterior muscle and the chest wall. The source of the bleeding was not identified but a diffuse oozing was present and not directly controllable. A packing with gauzes was applied between muscular layers avoiding direct closure of the skin and covered with 3M™ Steri-Drape™ . A thoracic tube was placed with drainage of 600 cc of serous fluid. Afterwards the bleeding stopped, the packing was removed 24 hours thereafter and a definitive closure of the wound was performed.

Figure 1: The chest wall hematoma extended on the whole chest wall on the right side and was clearly notable.

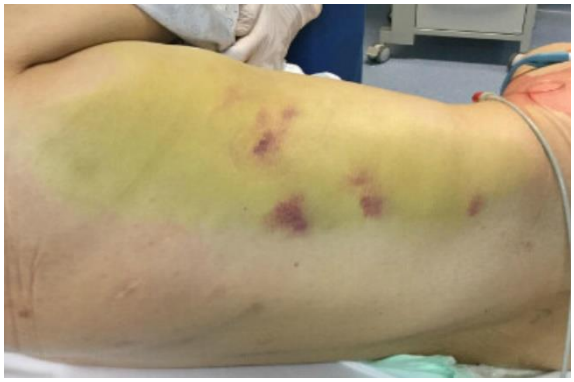


Figure 2: the CT scan shows the hematoma of the chest wall and the arrow indicate the presence of an active bleeding.

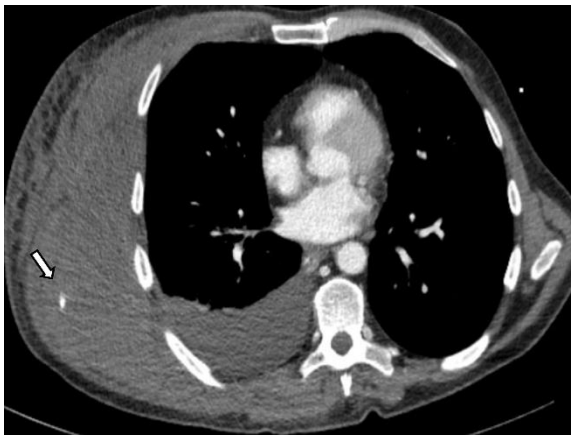
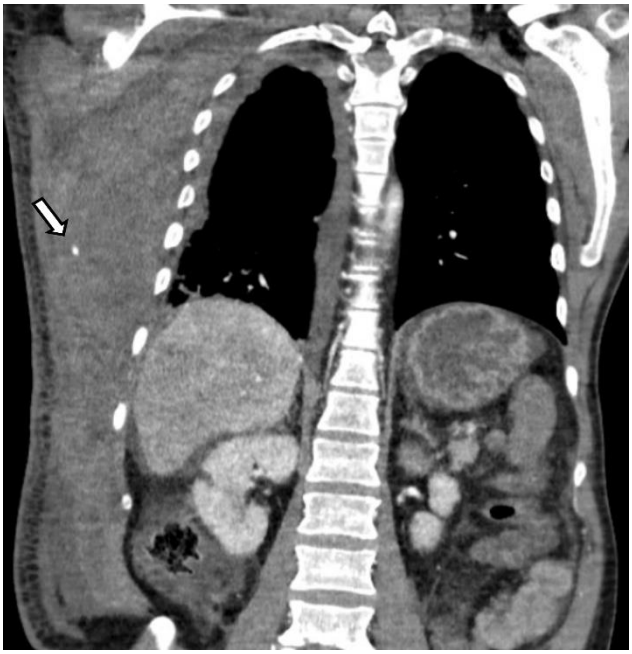


Figure 3: CT scan multi-planar reconstructions show the extension of the chest wall hematoma, the thoracic wall shift and the active source of bleeding (arrow).



Discussion

Spontaneous muscle hematomas of the chest wall are rare, mainly associated with anticoagulant therapy [1,4,5]. Conservative treatments are effective in up to 90% of patients and are based on coagulation correction, hematoma compression and supportive therapy such as fluid restoration, erythrocyte concentrates, plasma, vaso-active agents [5].

Angiographic embolization represent a valid alternative if conservative treatments are ineffective, although its use in hemorrhage within the chest wall originating from extra-thoracic sources is anecdotic and referred to traumatic or iatrogenic injuries [6-8].

Severe hemodynamical instability, coagulopathy, sign of neighbor organs compression and very small arteries network

feeding the hematoma, usually preclude the possibility of an endovascular approach [9].
In our case the artery feeding the hematoma was very peripheral with high chance to not be directly catheterized or even identified during angiography. In addition there were severe hemodynamical instability and sign of initial skin necrosis that precluded the minimally invasive approach.

Surgical approach was mandatory, but, in the context of severe coagulopathy, standard hemostatic techniques were not effective. Once evacuated the hematoma, a diffuse and uncontrollable oozing was observed and a damage control strategy was applied. Packing of the wound with a "delayed chest closure" [10] technique allowed hemorrhage control and stabilization of the patient before definitive closure.

We can conclude that due to the rarity of spontaneous hematoma of the chest wall, the therapy is not standardized and should be tailored on the patient. Endovascular treatment is attractive and mostly effective but, when contraindicated, surgical intervention should be taken into account with no delay. In our experience the damage control surgery permitted to treat the source of bleeding and to effectively manage a life-threatening condition.

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