A Rare Case of Spontaneous Hemopneumothorax due to Left Subclavian Artery Tear

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Spontaneous hemopneumothorax (SHP) is a rare but potentially life-threatening medical condition. It is defined as the accumulation of more than 400 ml of fluid with a hematocrit level of 25–50% in the pleural space [1]. SHP is usually a complication of simple pneumothorax in 3–7% of cases. Three possible mechanisms for this phenomenon have been suggested: tearing of vasculature adhesions between the parietal and the visceral pleura, tearing of vasculature bullae, and a tear in thin-walled aberrant blood vessels that lack a muscular layer, usually in the parietal pleura [2].

A 27 year old previously healthy male arrived at the emergency department complaining of severe chest pain that began 4 hours earlier. The triage nurse noted that he was dyspneic with a blood pressure of 90/60 mm Hg. He was immediately placed in a monitored room. A chest X-ray showed collapse of the left lung with a white infiltrate in the left hemithorax and deviation of the mediastinum and trachea to the right [Figure 1].

Due to suspicion of a tension pneumothorax a 12-F pneumothorax drain was placed using the Seldinger technique (Portex Seldinger Chest Drainage Kit, Smiths Medical, Hythe, Kent, UK). Blood began to flow out rapidly and the drain was therefore replaced with a 32-F large bore chest tube. The patient's blood pressure dropped to 50/30 mmHg and two units of type O blood were rapidly infused. More than 1200 ml of blood initially drained from the chest tube. Due to the patient's deteriorating hemodynamic status it was decided to transfer him to the operating room where he was intubated and a left thoracotomy was performed. During the procedure 1000 ml of fresh as well as clotted blood was found in the left chest cavity. Two blebs were identified as being attached to the left subclavian artery with active bleeding from the artery. The bleeding site was sutured with a 4-0 Prolene suture and the blebs were surgically removed. Both the bleeding and the air leak subsequently ceased. The patient was extubated the same day and was discharged on postoperative day 8.

The literature contains isolated case reports of tension hemopneumothorax [3], but this is the first we know of where the SHP was caused by a tear in the subclavian artery. According to the intraoperative report, this appeared to be due to bullae that were attached to the subclavian artery which subsequently ruptured along with the artery wall.

There are a number of mechanisms whereby SHP causes hemodynamic compromise. The collection of blood and air in the pleural cavity causes pressure on the thoracic blood vessels, thereby decreasing venous return to the heart. In addition, in cases where there is massive bleeding into the pleural cavity hypovolemic shock occurs. The negative intrathoracic pressure in the chest causes a further rapid increase in the size of the hemothorax.

A number of studies discuss various options for the treatment of hemopneumothorax. These include chest tube insertion with video-assisted thoracic surgery (VATS), thoracotomy, or conservative treatment. Onuki and colleagues [4] reviewed 21

Figure 1. A large left hemothorax with lung collapse and significant deviation of the mediastinum to the right

patients who presented with SHP, only 5 of whom were treated with open thoracotomy. The others were treated with VATS. Ng et al. [5] recommended VATS as the procedure of choice for treatment of SHP in stable patients. For the hemodynamically compromised patient, thoracotomy remains the surgical approach of choice.

This unique case highlights a previously undescribed mechanism of the cause of SHP and emphasizes the need for urgent thoracotomy in the hemodynamically unstable patient.

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