INTRODUCTION

Spontaneous hemopneumothorax (SHP) is a rare disorder, complicating 0.5 - 12% of patients with spontaneous pneumothorax.\(^1\)\(^-\)\(^3\) Simultaneous accumulation of air and blood in the thoracic cavity without underlying trauma or obvious causes is named as spontaneous hemopneumothorax. Bleeding usually occurs because of vascularised adhesions, consisting of aberrant vessels between the parietal and visceral pleura. These adhesions are torn as the lung collapses following pneumothorax. Rapid progression of symptoms can be seen because of blood loss which may cause hypovolemic shock. The initial treatment of spontaneous hemopneumothorax is chest tube drainage.\(^4\)

However, in cases with continuous or massive bleeding, emergency surgery must be performed. Thoracotomy or video assisted thoracic surgery are surgical interventions. In this study, retrospective analysis of the surgical experience is reported for massive hemorrhage because of spontaneous hemopneumothorax.

METHODOLOGY

Retrospective analysis of spontaneous hemopneumothorax patients was done in this study from November 2009 to August 2012. Among them, 9 (4.07%) were diagnosed with spontaneous hemopneumothorax. Chest X-ray and computed tomography were the diagnostic tools. Emergency thoracotomy was performed for 7 of 9 patients because of massive hemorrhage and continuous bleeding from the chest tube. Massive hematoma was documented in 2 of 7 patients at tomography. Bridging veins and torn pleural adhesion between parietal and visceral pleura were the source of bleeding determined at thoracotomy. Hematoma evacuation, resection of bullae, ligation of pleural adhesions and apical pleurectomy were performed. Spontaneous hemopneumothorax is an emergency due to massive hemorrhage and hematoma formation. Early surgical treatment is recommended for patients with spontaneous hemopneumothorax.

RESULTS

Two hundred and twenty one patients with spontaneous pneumothorax were treated. Among them, 9 (4.07%) were diagnosed with spontaneous hemopneumothorax. Parameters for deciding to emergency surgery were as follows: (a) 1000 ml or more blood drainage at time of chest tube insertion and continuous bleeding, (b) massive hematoma at computed tomography, and (c) clinical state of shock after excluding other causes.\(^6\) Informed consent was taken from all the patients.

According to the criteria, thoracotomy was performed to patients who had massive hemorrhage. Hematoma evacuation, resection of bullae, ligation of pleural adhesions, apical pleurectomy were performed. Bleeding bridging veins were controlled by using hemoclip. Bullae formations were resected by linear stapler. Chemical pleurodesis was not done because of apical pleurectomy.

Results were expressed as frequency percentage and measures of central tendency and dispersion.

EVIDENCE BASED REPORT

Emergency Surgery for Spontaneous Hemopneumothorax

Cumhur Murat Tulay and Mert Aygün

ABSTRACT

Emergency management of spontaneous hemopneumothorax patients was retrospectively analysed in this study. From November 2009 to August 2012, 221 patients with spontaneous pneumothorax were treated in the thoracic surgery clinic. Among them, 9 (4.07%) were diagnosed with spontaneous hemopneumothorax. Chest X-ray and computed tomography were the diagnostic tools. Emergency thoracotomy was performed for 7 of 9 patients because of massive hemorrhage and continuous bleeding from the chest tube. Massive hematoma was documented in 2 of 7 patients at tomography. Bridging veins and torn pleural adhesion between parietal and visceral pleura were the source of bleeding determined at thoracotomy. Hematoma evacuation, resection of bullae, ligation of pleural adhesions and apical pleurectomy were performed. Spontaneous hemopneumothorax is an emergency due to massive hemorrhage and hematoma formation. Early surgical treatment is recommended for patients with spontaneous hemopneumothorax.

Key Words: Bridging veins, Bullous lung, Pleural adhesion, Spontaneous hemopneumothorax, Emergency surgery.
urgent surgery. Chest tube drainage and follow-up period were effective and curative for 2 (22.2%) of 9 patients. Massive hematoma was documented in 2 of 7 patients at tomography. Bridging veins and torn pleural adhesions between parietal and visceral pleura were the source of bleeding in the majority, which was determined at thoracotomy. An unusual bleeding point originated from torn diaphragmatic adhesion in one patient (Figure 1). All bridging veins and bleeding parietal pleura from the torn adhesions were controlled directly. The amount of hematoma which were evacuated from intrathoracic cavity changed from 1000 to 1500 ml in 2 patients. Intercostal nerve blockage was done to all the patients. One chest tube was placed intraoperatively at the end of surgery.

Patients were discharged from the hospital within 6 - 10 days with full lung expansion. There was no intraoperative or postoperative mortality. Patients were re-evaluated at 10-day interval for first month, and then monthly with chest X-ray. No recurrence was observed.

**DISCUSSION**

Spontaneous hemopneumothorax is an uncommon condition which can cause shock and death. It occurs in about 0.5 - 12% of spontaneous pneumothorax cases. In this study, it was observed to be 4.07%, occurring in 9 among 221 patients.

The possible causes of spontaneous hemopneumothorax are torn pleural adhesions or aberrant vessels, bridging veins, rupture of vascularised bulla and underlying lung parenchyma. In this study, torn adhesions and rupture of bridging veins caused the massive hemothorax in spontaneous pneumothorax cases.

Bulla formation and torn adhesions are usually seen around the apex of the lung and this region is accepted as the major site of bleeding. Apex of the lung is accepted the most common site of bullous formation and surgeon especially looks into the apex. In one patient, it was observed to be unusual bleeding site from diaphragmatic adhesions. It shows that the thoracic surgeon has to evaluate the whole pleural face to determine possible adhesions and bleeding points.

The condition can be life-threatening due to progressive blood loss into the pleural cavity leading to hypovolemic shock. In addition to fluid resuscitation and stabilisation of vital functions with medical approach, surgery is an appropriate treatment to minimise complications, especially for hemodynamically unstable patients. In this series, 7 of the 9 patients had massive hemothorax and 2 of them had intrathoracic clot formation on tomography. Massive hemothorax and continuous bleeding was associated with spontaneous pneumothorax which needed emergency surgery. In 2 of the 9 patients, chest tube insertion and follow-up were curative, but thoracotomy had to be done for 7 of 9 patients.

It is considered that pressure hemostasis at the site of bleeding can be obtained by reinflation of the collapsed lung. However, insufficient expansion of the lung can not apply pressure to bleeding point. In cases of spontaneous hemopneumothorax, lung expansion may not be obtained which may lead to massive hemorrhage and/ or hematoma formation. Massive hemorrhage-hematoma formation prevents lung expansion. To prevent this paradox, surgery should be done at an early stage of spontaneous hemopneumothorax.

In the present cases, thoracotomy was the commonest procedure performed for surgery. VATS is an useful surgical skill for many of thoracic pathologies. In elective surgeries, VATS is generally performed for bulbous lung or pneumothorax. However, massive hemorrhage and

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
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<th>Amount of bleeding</th>
<th>Treatment</th>
<th>Shock situation</th>
<th>Source of bleeding</th>
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<td>1</td>
<td>16</td>
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<tr>
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<td>32</td>
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<tr>
<td>4</td>
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</tbody>
</table>

**Figure 1:** Bullous lung with bleeding point which was attached to the thoracic wall by bridging vein (black arrow).
shock conditions were needed to perform thoracotomy in these cases, because of faster and better visualisation of bleeding point. Removal of hematoma by suction requires time using thoracoscope. This can be done rapidly in emergency conditions with thoracotomy. Resection of bullae and apical pleurectomy leads to more adhesions formation and recurrences can be prevented.

CONCLUSION

Spontaneous hemopneumothorax is important due to massive hemorrhage and hematoma formation. The goals of treatment include resuscitation, hemostasis, and re-expansion of the lung. So the authors emphasize the importance of early recognition and prompt surgical intervention.

REFERENCES