

SILENT EMERGENCY- SPONTANEOUS HEMOPNEUMOTHORAX WITHOUT HEMODYNAMIC INSTABILITY: A CASE REPORT AND REVIEW OF LITERATURE.

Respiratory Medicine

**Dr Sandhya
Balasundaram**

M.D, DNB (Respiratory Medicine). Senior resident, Department of Respiratory Medicine, Government medical college and hospital, Ramagundam, Telangana.

**Dr Prashamsa
Chelimalla**

M.D (Respiratory Medicine). Assistant professor, Department of Respiratory Medicine, Government medical college and hospital, Ramagundam, Telangana.

ABSTRACT

We report a case of 21-year-old male who presented to the emergency with the complaints of left sided chest pain, breathing difficulty for past three days. Patient denied any associated complaints of fever, cough, trauma. Chest x-ray revealed left homogenous opacity suggestive of left massive pleural effusion. Needle aspiration showed frank blood. Left sided closed tube thoracostomy was done and 800ml of frank blood was drained immediately. Immediately ICD was clamped and CT-chest was taken which revealed left minimal pneumothorax with mild left effusion. Right lung was normal. Complete blood count showed fall in hemoglobin for which one unit packed red blood cells was transfused. Subsequently, the drain reduced and the patient improved clinically. ICD tube was removed. In patients with hemopneumothorax having persistent drain, hypovolemic shock or persistent air leak surgical approach is better suited. It can be done either by open thoracotomy or VATS. Young males presenting with chest pain, unstable hemodynamic status with no obvious trauma showed raise suspicion for hemothorax. Timely diagnosis and evaluation can prevent recurrence and worsening of hemodynamic status.

KEYWORDS

Hemopneumothorax, closed tube thoracostomy, thoracotomy, video assisted thoroscopic surgery (VATS).

INTRODUCTION-

Spontaneous hemothorax is defined as condition characterized by sudden accumulation of blood >400ml in the pleural cavity without obvious trauma. It's often life threatening as it can lead to hypovolemic shock if left untreated. It is commonly seen in tall, thin young males with male to female ratio being 4:1 to 15:1. Hemothorax is diagnosed with aspiration of frank blood from pleural cavity, pleural fluid hematocrit more than 50% of blood hematocrit. Spontaneous causes include coagulopathies, patient on anticoagulant therapy, malignancy infiltrating pleural surface, congenital vascular malformations. Treatment includes closed tube thoracostomy, in refractory cases surgical measures like thoracotomy, VATS maybe useful.

In this case report, we report a 21-year-old presenting with left spontaneous hemopneumothorax with apical bleb conservatively managed with closed tube thoracostomy.

Case Report-

A 21-year-old male non-smoker presented to the emergency department with complaints of left sided chest pain and breathing difficulty for 3 days. The pain was sharp initially and gradually progressed over three days. Breathing difficult was insidious in onset and gradually progressive from grade 1 MMRC to grade 2 MMRC. Patient denied any associated fever, cough, wheeze, any trauma or straining episodes prior. On presentation the vitals were pulse rate-91/min, room air saturation of 98%, blood pressure- 110/60mmHg, respiratory rate- 24/min. On auscultation breath sounds were decreased on the left side. chest x-ray revealed left homogenous opacity occupying all zones suggestive of left massive pleural effusion (Image1). On diagnostic aspiration frank blood was aspirated. Left sided closed tube thoracostomy was done and 800ml of blood was drained. ICD tube was clamped and patient was subjected to CT-chest which revealed left minimal apical pneumothorax with moderate pleural effusion. The complete blood count of the patient is shown in table 1. Pleural fluid analysis is shown in table 2. The pleural fluid hematocrit was more than 50% of blood hematocrit confirming hemothorax. Pleural fluid analysis showed neutrophilic predominant low ADA picture. Cytology was negative for malignant cells. Coagulation profile was within normal limits as shown in table 3. Due to continuous drain of more than 300ml on third day, CBC was repeated revealed drop in hemoglobin from 10.9g/dL to 8.6g/dL. The patient was subjected to CECT-chest to look for active bleeding. There was no extravasation of dye. One unit of packed red blood cells was transfused. Subsequently, after 4 days of closed tube thoracostomy the drain reduced, repeat CBC revealed increase in hemoglobin after transfusion. Repeat CT-chest was done which showed very minimal pleural effusion and left apical bleb (image 2). Right lung was completely normal. As the drain was less than 50ml for three consecutive days, ICD was removed. Patient improved clinically and hemodynamically and was discharged.

TABLE 1- Complete blood count

On admission	hemoglobin	WBSs	Platelets	Hematocrit
Day 1	10.9 g/dL	9,080 cells/ μ L	1,53,000 cells/ μ L	26%
Day 3	8.6 g/dL	9,000 cells/ μ L	1,52,000 cells/ μ L	
Day 4	9.9 g/dL	9,000 cells/ μ L	1,54,000 cells/ μ L	

TABLE 2- Pleural fluid analysis

Pleural fluid hematocrit	37%
neutrophils	74%
lymphocytes	26%
ADA	28

TABLE 3- coagulation profile

Control PT	11	13.9
Test (PT)	12.1"	
INR	1.10	1-1.2
Control (APTT)	31	24.1- 36.6 Seconds
Test (APTT)	34"	



Image 1- left pleural effusion

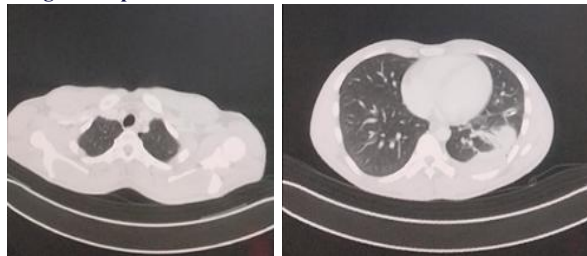


Image 2- left apical bleb with minimal effusion

DISCUSSION-

Spontaneous hemopneumothorax is a rare but life-threatening condition. It is defined as collection of blood in the pleural cavity of more than 400ml in the absence of obvious trauma. the condition is commonly seen in males, male to female ratio is 4:1 to 15:1[1]. The incidence ranges from 1% -12% [1]. The common age group is between 20-40 years tall thin males [1]. The causes of spontaneous hemopneumothorax can include three main factors- (1) hemorrhage can result from a torn adhesion between visceral and parietal pleura. (2) rupture of vascularized bulla. (3) Bleed from an aberrant congenital vessel [2],[3]. Other causes include patient on anticoagulant therapy, bleeding disorders like hemophilia, instrumentation and post procedure complication, ruptured aortic aneurysm. In this case, the repeat CT-chest after lung expansion showed left apical bleb, probably attributing to the potential cause of hemopneumothorax in this patient. In older patients, smokers, previously existing emphysematous lung can lead to recurrence [1]. The patient presentation can vary from being vitally stable to hemodynamic compromise like hypovolemic shock. In this case, the patient experienced mild left sided chest pain, but did not have any hemodynamic compromise. The diagnosis is done by comparing pleural fluid hematocrit to blood hematocrit. If the pleural fluid hematocrit is 25%-50% more than the blood hematocrit, it is indicative of hemothorax. In long standing cases, there can be fall in the hematocrit due to lysis. Chest x-rays are commonly used to diagnose SHP which can typically reveal air fluid level. Ultrasound chest is more effective in diagnosing hemothorax. If patient is vitally stable CECT chest is superior than ultrasound and chest x-rays [1]. The treatment modality includes stabilization of the patient and evacuation of blood from the pleural cavity. It can be done by closed tube thoracostomy. After closed tube thoracostomy, if there is persistent drain >100ml/hour, persistent air leak, non-expanding lung, hypovolemic shock, patient can be managed surgically either by video assisted thoracoscopic surgery (VATS) or open thoracotomy [3][4]. In this particular case, the drain stopped after 4 days, and patient did not require surgical intervention. VATS is preferred over open thoracotomy due to its lesser post operative complication, minimally invasive nature and shorter hospital stay. VATS is also useful in pleurodesis and bullectomy apart from adequate control of bleeding [1][5].

Unexplained hemodynamic compromise in young males with no obvious trauma history should raise high suspicion of spontaneous hemothorax. High suspicion index can help in early diagnosis and timely intervention and prevention of recurrence.

CONCLUSION-

Spontaneous hemopneumothorax is a rare but potential life-threatening entity, if neglected can progress to hemodynamic compromise. The condition when identified can be treated surgically thereby controlling the active bleeding and preventing recurrence, after ruling out other causes of bleeding like coagulopathies.

Abbreviations-

- ICD- intercoastal drainage
- CT- Computed tomography
- SHP- spontaneous hemopneumothorax
- VATS- video assisted thoracoscopic surgery
- PT- prothrombin time
- APTT- activated partial thromboplastin time
- ADA- adenosine deaminase
- CECT- contrast enhanced computed tomography
- CBC- complete blood count
- WBCs- White blood cells

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