Massive pleural effusion: A rare cause of an obstructive shock.

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ABSTRACT

Pleural effusion is the abnormal collection of fluid in the pleural cavity. It can be classified as transudative and exudative and it can present with multiple symptoms including cough, dyspnea, orthopnea etc. Here we present a case of a critically ill man with cough, dyspnea, hypotension with X-ray Chest and a HRCT demonstrating massive right sided pleural effusion causing obstructive shock leading to hypotension BP 70/50 mmHg which was corrected immediately after chest drain insertion. Although previously reported yet still it is a very rare cause of an obstructive shock hence should be kept in the pool of differentials while encountering a patient of shock.

Keywords: Pleural effusion, Massive, Obstructive shock, Hypotension, Management, chest drain.

How to Cite This:
Habib R, Ahmed F, Khattak SK, Masoodi PWA, Zaib Z, Riaz W. Massive pleural effusion: A rare cause of an obstructive shock. Isra Med J. 2020; 11(3):166-167.

INTRODUCTION

Shock is defined as a state of circulatory collapse resulting from multitude of conditions and resulting in multiple organ failure. Hypovolemic, cardiogenic, distributive and obstructive shocks are four common types[1]. Obstructive shock is the rarest type of shock results from multiple conditions associated with physical obstruction of great vessels or heart itself like pericardial tamponade, vena cava compression, tension pneumothorax, pulmonary embolism, mediastinal space occupying lesions, aortic dissection and Leriches syndrome etc.[2] massive pleural effusion is the rarest cause of obstructive shock. The pathophysiology includes collection of abnormal amount of pleural fluid in pleural space to a level that it increases intrathoracic pressure resulting in hemodynamic instability leading to obstructive shock[3]. It can present with various symptoms most common being dyspnea; cough, chest pain, orthopnea among others[4]. Pleural effusion is said to be massive if it causes complete or near complete opacification of ipsilateral hemithorax i.e. more than two third of ipsilateral hemithorax on chest radiographs[5]. Literature review did not show any case of massive pleural effusion presented as a shock. Here we reporting a rare case in which a patient who had a massive pleural effusion resulting in mediastinal shifting and subsequent obstructive shock.

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Received for Publication: February 03, 2020
1st Revision of Manuscript: June 09, 2020
Accepted for Publication: September 07, 2020

CASE REPORT

A 85 year old man presented to the emergency Department in evening time for due to complains of worsening dyspnea and cough since morning via referral from a District Head Quarter Hospital. Upon his initial evaluation his vitals were found to be worrisome that he was hypotensive (BP - 80/60), tachycardiac (HR-96 beats/minute), SpO2 was 89% and temperature was recorded to be normal. He was tachyonic (RR-24/min), dysphonic and drowsy. The patient was critically ill and his past history suggested of an ischemic heart disease and a recent diagnosis of hypothyroidism. On detailed clinical examination, prominent neck veins, decreased chest expansion, breath sounds were absent on right side of chest with a stony dull note on percussion. Rest of the physical examination was unremarkable.

He was immediately started on IV fluids and vasopressors according to ward protocols yet his shock was observed to be refractory to this management. His X-Ray chest PA view showed a massive right sided pleural effusion with mediastinal shift. No pulmonary markings of right side lung were identifiable. A diagnosis of a massive pleural effusion resulting in mediastinal shift leading to an obstructive shock was made.

The surgical intervention seeked immediately for a chest tube insertion (thoracocentesis) as his Blood Pressure was still not improving. Upon first availability of emergency operation room the patient was shifted. At that time his BP was 70/50 pulse was

90 and his Spo_2 was 77%.A chest drain of 32G was inserted under local anesthesia and was connected to an under-water seal. Initially two liters of fluid was drained and the drain was clamped. Another X ray chest PA view was performed to observe the placement of the drain. The vitals were recorded again after half an hour and there was a significant increase in the BP of this patient (100/70).His spO_2 was 87% and he was responding well. He was shifted back to the ward and his vitals were recorded throughout the night and he maintained the systolic BP at 100 to 90.

His base line investigations were performed and fluid cytology was also requested which came out to be negative for malignant cells. CBC showed Hb to be 14.1 g\dL, WBC were 12200 mm^3,Platelets were 252000 mm^3, Sodium was 125 mmol\L, Potassium was 2.8 mmol\L, urea was 58 g\dL Creatinine was 1.1 mg\dL. He was shifted to pulmonology unit for a bronchoscopy and for further workup.

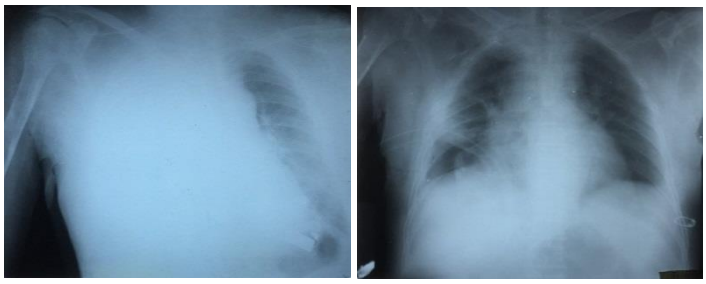

Figure-1: Chest X-ray PA view shows massive pleural effusion involving whole right hemi-thorax.

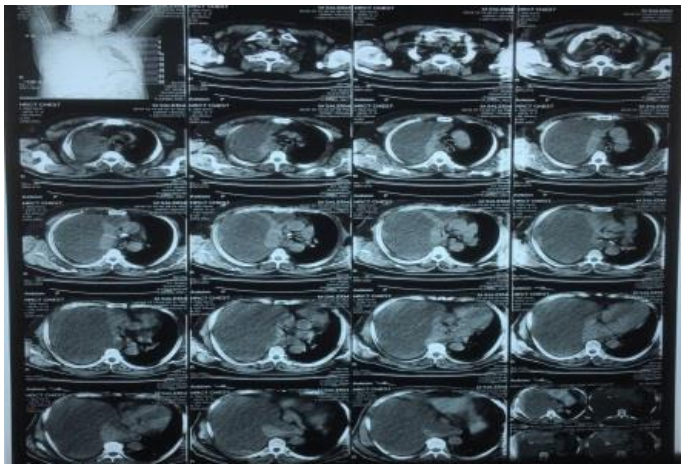

Figure-2: CT scan chest shows massive pleural effusion involving whole right hemi-thorax

DISCUSSION

Shock is a state of inadequate perfusion and oxygen delivery to tissues. Obstructive shock secondary to extra cardiac cause is very rare and is life threatening condition if not diagnosed in time[5]. Impaired capillary permeability and decreased lymphatic drainage causes accumulation of fluid in body cavities and raises the intrathoracic pressure and worsens the cardiac filling leading to obstructive shock[3,4].

To our knowledge, our case is among very first few cases of massive pleural effusion leading to mediastinal shift and impairing cardiac filling leading to hemodynamic instability. Our case report is consistent with case report presented by Werlang et al.[6] Their report indicated that severe hypothyroidism is rare cause of pericardial and pleural effusion and massive pleural effusion being very unusual cause of obstructive shock. Their report also suggested that thoracentesis is safest initial procedure to perform in patients presenting with pericardial and pleural effusion. Thoracentesis not only resolved pleural effusion but pericardial effusion also get resolved without any further intervention and resulting in recovery of hemodynamic instability[6].

In summary, massive pleural effusion resulting from hypothyroidism and leading to obstructive shock is very unusual and has high mortality if remained undiagnosed. As indicated by our report, patient presenting in emergency department with hemodynamic instability secondary to massive pleural effusion, pleural tap is the first procedure to be performed to stabilize the hemodynamic status of patient.

CONCLUSION

Obstructive shock due to massive pleural effusion is a rare case and clinician should keep it in the differential while encountering a patient with shock.

AUTHOR'S CONTRIBUTION

Habib R: Conception and design of study, data analysis and manuscript writing
Ahmed F: Manuscript drafting, data compilation and analysis
Khattak SK: Design research methodology and Final critical review of manuscript
Masoodi PWA: Data compilation, literature review
Zaib Z: literature review, critical analysis
Riaz W: literature search and review, proof reading.

Disclaimer: None.
Conflict of Interest: None.
Source of Funding: None.

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