

Rare Case of Pneumopericardium As A Complication of Bronchoigenic Carcinoma

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Abstract: A 60 year old female presented with complaints of chest pain and breathlessness since 1 week. She was a known case of pulmonary tuberculosis and was on treatment for the same. Her chest x ray showed presence of gross pneumopericardium. 2D ECHO was apparently normal. HRCT thorax was suggestive of Koch's sequel in the form of gross pneumopericardium with cavitary changes and consolidation in left lung and an ill-defined soft tissue density lesion in left main bronchus. Left antero-lateral thoracotomy with pericardectomy with pleuro-pericardial fistula closure with glue insertion was performed. She was discharged on the 5th postoperative day. After 10 days she presented with complaints of bilateral lower limb weakness since 1 week. MRI spine revealed compressive lesion at level of D 7 probably of infective etiology. Her tissue biopsy (fistulous tract) showed features suggestive of squamous cell carcinoma – bronchogenic carcinoma.

Keywords: Pneumopericardium, bronchogenic carcinoma

I. Introduction

Pneumomediastinum is a condition where there is gas in the interstices of the mediastinum. Three common causes include (1) alveolar rupture with dissection of air into the mediastinum, (2) perforation or rupture of the esophagus, trachea, or main bronchi, and (3) dissection of air from the neck or abdomen into the mediastinum.⁽¹⁾ Pneumopericardium and pneumothorax are extremely rare complications of bronchogenic carcinoma.⁽²⁾ However it is a well-recognized complication of malignancy of the alimentary tract.⁽³⁾ We are presenting a rare case of pneumopericardium as a complication of ? Malignancy (Bronchogenic carcinoma – squamous cell carcinoma) / ? tuberculosis.

II. Case Report

A 60 year old female presented with complaints of chest pain and breathlessness since 1 week. She was a known case of pulmonary tuberculosis and was on treatment for the same. No past history of any other known medical illness. No history of weight loss or reduced appetite. No significant family history.

On examination: Temp: 98.6° F, Pulse: 90/min, BP: 130/84mm of Hg, RR: 18/min, SPO2: 99% in room air, RS: rhonchi + left lower zone creps, CVS: pericardial rub.

Routine investigations revealed: Hb: 11.7gm, TC : 8840cellmm³, DC: P 80, L 12, E 4, M 4, B 0 . APC 324000cellmm³. ESR :65 mm/hr . RBS: 76mg %, creatinine 0.5mg %, total bilirubin 0.2mg% , total protein 6.5gm%, albumin 3.6gm%, potassium 4.6 meq sodium 135 meq.

Abga: normal, TSH : 0.4637 micro IU/ ml, Free T3 : 1.36 ng/ dl , FREE T4 : 1.04 ng / dl .

Sputum Rm: Gram positive cocci 10-25/hpf, No Afb

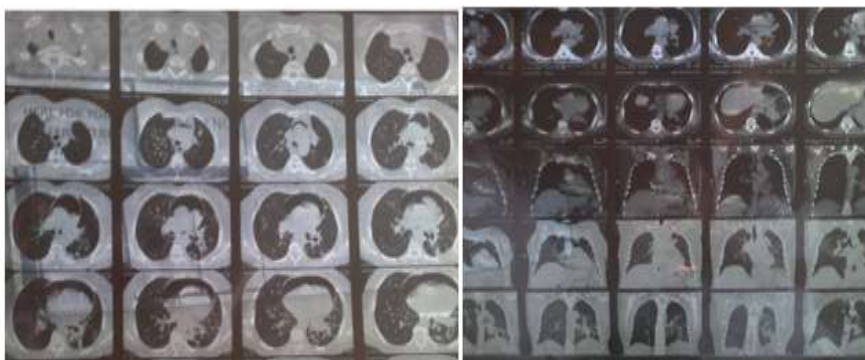
Chest X ray : gross pneumopericardium with left lower zone consolidation



Ecg: Low voltage complexes

2D Echo: EF 55% ,normal LV size and fair LV function. Trivial MR, Mild TR, Trivial AR. RVSP :26mm

Hrct Thorax: Cavitory changes with consolidation noted in superior segment in left lower lobe. Bronchiectatic changes in left lung field. Gross pneumopericardium is seen. Ill-defined soft tissue hypo density noted intraluminally in left main bronchus. Pneumo mediastinum noted adjacent to left main bronchus. Suspicious air leak from bronchus. Fibrotic changes in left lung field. Pleural thickening noted in posterior radial aspect and antero lateral aspect of chest of left side.



Multiple enlarges lymph nodes are noted in pre tracheal para tracheal and pre vascular region largest measuring 14 x 9 mm. evidence of 40x 15 mm sized hypo dense lesion noted in left lobe of thyroid possibility of colloidal nodule. On the 5th day of day of admission she was operated and left thoracoscopy and antero lateral thoracotomy with pericardectomy with pleuro pericardial fistula closure with glue insertion was performed and left sided ICD insertion was done. Postoperative CHEST X RAY showed collapse lung with no evidence of any residual pneumopericardium. She was continued on bronchodilators and antibiotics with vigorous chest physiotherapy and spirometry. Post-operative day 5th CXR showed residual consolidation in left lower zone.



ICD removal was done. She was hemodynamically stable on discharge.

the 10th day of discharge she presented with complaint of bilateral lower limb weakness since 1 week. CNS examination revealed normal tone, power of both lower limbs were 2/5. DTR ++++. Babinski sign positive bilaterally. No clonus. MRI dorsolumbar spine revealed compressive lesion at the level of D7. Tissue biopsy report: multiple sections from the specimen labeled as pericardial patch shows large fibro connective tissue with mild inflammatory cell infiltrate. Vascular congestion and proliferation are present. No evidence of malignancy or tuberculosis is seen in the received bit of tissue. Serial sections from specimen labeled as pleuropericardial fistula shows few clusters and sheets of atypical epithelial cells. No evidence of tuberculosis is seen in the received bit of tissue. Impression: possibility of invasion of squamous cell from primary site.?Bronchogenic in origin.

III. Discussion

Pneumopericardium is rare - defined as a collection of air or gas in the pericardial space. The amount of air required to produce hemodynamic changes depends on the volume and rate of introduction: hemodynamic changes may occur with as little as 60 ml of air if it is introduced rapidly, up to 500 ml may accumulate into the pericardium without marked effect if introduced slowly into the pericardial space.

Etiology can be divided into three broad categories.

- a) **Trauma** : most common cause is trauma:
 - blunt or penetrating chest injury and barotrauma are included in this category:
 - barotrauma is usually secondary to positive pressure ventilation (both invasive and noninvasive)
 - most commonly occurring in neonatal practice
 - however cases associated with severe asthma, prolonged labor and cocaine inhalation may occur
- b) second category - **Fistula** between pericardium and a hollow or air-containing structure e.g. pleural space, pulmonary substance, bronchial tree, gastrointestinal tract
 - examples include
 - staphylococcal lung abscess rupture
 - erosion into the pericardium as a result of a bronchial carcinoma
 - gastropericardial fistula complicating peptic ulcer disease
- c) third category - much less common is secondary to gas production **De Novo** by microorganisms invading the pericardial sac e.g. Clostridium perfringens and Klebsiella

Two distinctive clinical signs associated with pneumopericardium.

- Splashing 'mill wheel' murmur - this was described in the first description of this condition by Bricketeau in 1844. The case was in fact one of pyopneumopericardium. The 'mill wheel' murmur described was a result of the combination of fluid and gas in the pericardial space
- presence of shifting tympany - revealed when the precordium is percussed in the recumbent and upright positions

In pneumopericardium include:

- ECG - may reveal signs of pericarditis; at the point of tamponade then bradycardia is said to be common
- CXR - may allow differentiation between pneumopericardium and pneumomediastinum
- may show 'transverse band of air' sign - represents air within the transverse sinus of the pericardium.
- 'transverse band of air' sign is not present in pure pneumomediastinum or medial pneumothorax
- CT scan - demonstrates pericardial air; also may provide diagnostic clues to the aetiology of the pneumopericardium
- barium contrast swallow - may demonstrate an oesophagopericardial fistula
- negative result cannot completely exclude this diagnosis
- echocardiography - may reveal pathognomonic spontaneous contrast within the pericardial space; also may show features of cardiac tamponade if present

Management:

Seek expert advice.

- in the absence of tension then, in general, treatment is aimed at the specific cause
- if signs of tamponade develop then
- za2zwurgent pericardiocentesis is required
- a pericardial catheter should be left in place in order to prevent the development of further tension
- Prognosis:
- pneumopericardium - one review revealed a 57% all-cause mortality
- pyopneumopericardium - has an even higher associated mortality rate

Pneumopericardium is extremely rare complication of bronchogenic carcinoma.⁽²⁾ Malignant tumour of lung have been reported to be associated with pneumopericardium and pneumomediastinum, but it is of interest that most of these have occurred with metastatic bone sarcomas. Pneumopericardium has also been reported as a complication of disseminated staphylococcal sepsis in a 12yr old female.⁽⁵⁾

Reference

- [1]. 18th Edition Of Harrison's Principle Of Internal Medicine. Page 2182.
- [2]. West J Med. 1976 February; 124(2): 144-146. Pmcid: Pmc1130473 Page 144, 145
- [3]. Thorax. 1976 August; 31(4): 460-465 Pmcid: Pmc470460
- [4]. Stacey S Et Al. A Case Of Spontaneous Tension Pneumopericardium. Br J Cardiol2004;11:32-14.
- [5]. Saudi J Anaesth 2011 Oct;5(4):434-7. Doi: 10.4103/1658-354x.87278: Pmid:22144936[Pubmed] Pmcid:Pmc3227318