Case report

Catamenial pneumothorax: a case report

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Abstract

Introduction- Catamenial pneumothorax, an extremely rare condition, is defined as the accumulation of air in the pleural cavity occurring in conjunction with menstrual periods and during ovulation. It accounts for only 3-6%3,4. Higher rates are reported in those with primary spontaneous pneumothorax 3-6%, and the highest rates are reported in those who have recurrent pneumothorax or pneumothorax which requires surgery in 6-20% and catamenial pneumothorax (65-89%). This is primarily caused by endometriosis of pleura5. It is seen in 30-40 years aged women. The blood and air cause collapse of lung which is usually less than 72 hours. There is recurrence of lung collapse which helps in diagnosing the pathology.

Several hypotheses have been proposed for this e.g. auto transplantation via retrograde menstruation, microembolisation/metastasis, coelomic metaplasia. Although specific risk factors for the development of pelvic endometriosis have been described such as short menstrual cycles, prolonged menses, nulliparity, early menarche/late menopause and tall thin body habitus, it is not known whether the same factors can increase the risk for thoracic involvement or not. Genetic predisposition for endometriosis has also been described but no such association has been reported for the same.

The most common presentation of thoracic endometriosis is catamenial pneumothorax which accounts for 70-73%7-10. A 15% proportion has catamenial pneumothorax due to probable thoracic involvement, and <10% have pneumothorax that has no temporal relationship with menses. Patients with endometriosis-related non-catamenial pneumothorax are typically identified during surgery for recurrent pneumothorax.

Symptoms usually begin just before or within 72 hours after the onset of menstruation, rarely 96 hours. Chest or scapular pain is the most common symptom. Examination findings may reveal reduced breath sounds and tracheal deviation. Symptoms and signs are mostly right-sided.

Pneumothoraces on chest radiography can be of any size and are typically right-sided but can occur left-sided or bilateral also2,4. Occasionally, pneumomediastinum or pneumoperitoneum is evident. Chest radiographs may also reveal other associated features of thoracic endometriosis including an effusion due to hemothorax.
with or without mediastinal shift depending upon the size, parenchymal nodules and cavities, and a nodular appearance of the diaphragm due to abdominal viscus protrusion through diaphragmatic perforations. Chest CT scans are most likely to show abnormalities when patients are symptomatic. Due to the higher resolution of CT, abnormalities not visualized on chest radiography may be better appreciated using this modality. These include pneumothorax, pneumomediastinum or pneumoperitoneum, bullae, pleural nodules, parenchymal nodules, small cavities, scarring, ground glass infiltrates, and/or pleural effusions.

Magnetic resonance imaging (MRI) may detect similar findings with better resolution compared to chest CT.

Grossly, it may occur in isolation, coexist, or be absent. Endometrial implants may be found on the pleural, diaphragmatic and pericardial. They can be single or multiple, vary in size. Diaphragmatic perforations are circular or elliptical, single or multiple, and usually located at the central tendon. They are usually small, measuring 1 to 3 mm in size but can be larger in some cases up to 10 mm. Endometrial implants are histologically similar to that of endometrium in the uterine cavity; they share two major features, endometrial glands and stroma.

Biochemical investigation that helps in diagnosing is CA-125 which is elevated. Video-assisted thoracoscopic surgery confirms the diagnosis. It gets resolved spontaneously in many cases but sometimes it may require chest tube insertion to release air/blood. Hormonal treatment, surgery or combined are also the approaches.

Pneumothorax due to thoracic endometriosis is primarily treated by definitively managing the presenting feature (e.g., chest tube drainage of pneumothorax) followed by secondary prevention of recurrence.

Recurrent pneumothorax is prevented using surgical blebectomy, pleurodesis, and diaphragmatic repair. Once the diagnosis is confirmed, adjunctive hormonal suppressive therapy is usually administered postoperatively, for 6 to 12 months.

Case report

A 35-year-old female, non-smoker, presented to pulmonary OPD with complaints of chest pain and breathlessness with dry cough for 2 days. These coincided with the onset of her menstrual cycle. She had a past history of endometriosis which was diagnosed as she had metrorrhagia. There was no history of trauma, fever, chronic lung disease, pelvic or abdominal pain. On examination, breath sounds were decreased in right lung base. She got her chest x-ray done which showed right sided moderate pneumothorax with small amount of pleural fluid. These findings were verified in CECT thorax. There were no pleural blebs seen on radiological investigations. Clinical diagnosis of catamenial pneumohemothorax was made and patient was managed with chest tube insertion and was discharged on levonorgestrel/ethinyl estradiol tablets. Three months later she had similar symptoms that occurred at the time of menstruation. Her chest x-ray again showed the right sided pneumothorax and was consulted with CTVS surgeon. She underwent video-assisted thoracoscopic surgery and pleurodesis and nodules were sent for histopathology which revealed endometriosis. She recovered well and was discharged on POD-5 with no complications.

Discussion

The patient initially was managed with chest tube insertion and hormonal therapy. Later on, she had a recurrence so she underwent VATS and pleurodesis and recovered well with no complications. She visits in follow-up with no recurrence till now.

Conclusion

Catamenial pneumothorax is a very rare condition that occurs only in 3-6% of cases and should not be missed, in a young female with chest pain during her menstruation. The management of catamenial pneumohemothorax is multidisciplinary i.e. can be managed by hormonal therapy, chest tube insertion, surgery, or in combination.
References


Figure 2- CECT thorax showing right sided pneumothorax

Figure 3- Post ICD insertion x-ray

Figure 4- Showing intra-operatively: diaphragmatic lesions- multiple circular and elliptical red spots or nodules and holes at right leaflet of the central tendon

Figure 5- Showing endometriosis in histopathology

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