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Case Report

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Recurrent Catamenial Pneumothorax After Multiple Chest Tube Placements, Pleurodesis and Vats

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Abstract

Catamenial pneumothorax is characterized by spontaneous pneumothorax occurring 72 hours before or after onset of menstruation in a reproductive aged woman. It is an extremely rare condition, and although generally thought to be due to abnormal migration of endometrial tissue to the pleural space, the mechanism of this migration is unclear. We present a case of recurrent catamenial pneumothorax after chest tube placements, pleurodesis and video-assisted thoracoscopic surgery (VATS).

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Introduction

Occurrence of endometrial glands and stroma outside the uterine cavity is known as endometriosis. Most often endometriosis is associated with lesions in the pelvis and abdomen in ovaries, uterosacral ligaments, fallopian tubes and cul-de-sac [1]. However, endometrial tissue may proliferate in any part of the body. Rarely, it is found outside of pelvis. The most common extra-pelvic location of endometriosis is thorax [2]. Most common presentation of thoracic endometriosis is catamenial pneumothorax [3, 4].

Case Presentation

Thirty-seven year old female with Past medical history of asthma, presented to the emergency department complaining of shortness of breath. She first noticed the shortness of breath in the morning but went to work attributing it to fatigue and viral infection. At work, patient experience chest discomfort and heard a popping sound in the right side of her chest after which she felt a sharp pain. The pain was located with right substernal region and right subscapular region. She also experienced dysphagia and palpitations along with chest discomfort, fatigue, and shortness of breath. Patient has had similar symptoms before during her menstrual cycles and also had six episodes of pneumothorax. Last episode was four years ago during which she underwent pleurodesis and Video Assisted thoracic surgery with decortication. patient is currently on her third day of menstrual cycle. She also has past surgical history of fibroidectomy and was scheduled to undergo laparoscopic ovarian cyst removal two days later. Patient denies any chest pain, nausea, vomiting, fevers, chills, abdominal pain, diarrhea or constipation. She has never smoked. She denies any alcohol use or illicit drug use. She has no known drug allergies. Her asthma is controlled with albuterol and singulair.

On admission, patient was hemodynamically stable with heart rate of 89, blood pressure of 112/78, respiration rate 18 breaths per minute, saturating 95 % on room air and 100% on 5 L non-rebreather mask. Decrease breaths sounds present in the right lung fields. Chest x-ray was read to be within normal limits initially. Upon close examination, a right-sided lateral and apical loss of lung markings signifying pneumothorax was apparent. Computer tomography of the chest confirmed small right sided pneumothorax, primarily at the lung base. Comprehensive metabolic panel was within normal limits. Complete blood count was normal and troponins were negative.

Patient was admitted to the hospital and placed on 8L oxygen via nonrebreather mask. Follow up chest X-ray in the morning showed improvement of pneumothorax. Subsequently patient was discharged home in stable condition. Patient reported resolution of all symptoms two weeks later in the clinic. Repeat Chest X-ray two weeks later was normal.

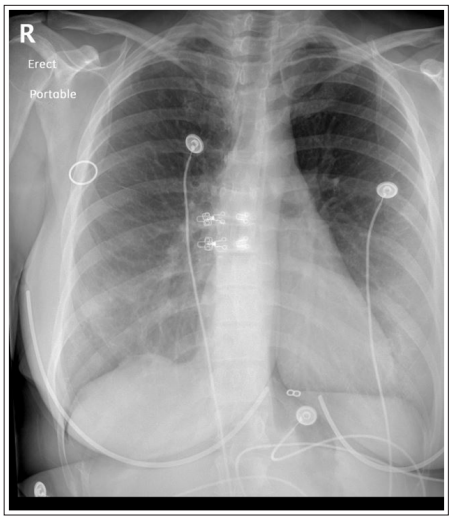

Figure 1: Initial CXR of the Patient Which was Read Within Normal Limits

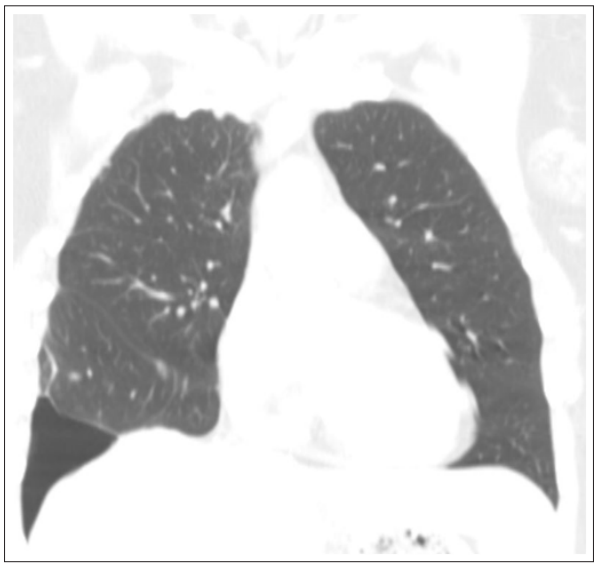

Figure 2: CT Scan Image Showing Pneumothorax in the Right Lung Base

Figure 3: CT Scan Image on Initial Presentation Showing Pneumothorax in the Anterior Lung Base

Discussion

Spontaneous pneumothorax is a cause of admission in the hospital, more often seen in males, as compared to females with a sex ratio of 3.2-to-1. The annual incidence of hospitalized cases for spontaneous pneumothorax is 22.2/100 000 male patients and 6.7/100 000 female patients. Most cases occur after the age 45 [5]. We propose it is important keep pneumothorax in the differential in patients with younger than 45, such as our patient. Furthermore, catamenial pneumothorax is underdiagnosed and under reported. As a result, we encourage keeping catamenial pneumothorax in the differential and incorporate asking questions regarding females' menstrual history to diagnose it earlier.

This case illustrates the rare occurrence of catamenial pneumothorax after treatment with VATS and pleurodesis. In a patient who presents complaining of chest discomfort and shortness of breath, afebrile without leukocytosis, pneumothorax should be suspected. Pneumothorax becomes ever more likely when accounting for prior history of pneumothorax. These patients undergo surgical treatment, with pleurodesis or VATs [6]. Pleurodesis and VATS have shown comparable outcomes as a treatment for pneumothorax. Our patient is unique since she has undergone both. It is this history of undergoing multiple surgical interventions that has distorted the radiological findings when diagnosing pneumothorax in this patient. Upon initial evaluation, the chest X-ray was interpreted to be normal, likely due to part of the lung adhering to the thoracic cavity after patient underwent pleurodesis and VATS. The subsequent CT scan showed the patient's pneumothorax clearly in the apex and base of the right lung. Subsequently, the patient improved with hundred percent oxygen via a non-breather mask. This varying imaging presentation led to diagnostic difficulty further distinguishing this case.

Patients that undergo surgical intervention to treat catamenial pneumothorax should also be treated with adjunct hormonal suppression therapy to prevent further recurrence [7]. The estrogen threshold hypothesis by Barbieri postulates gonadotropin-releasing hormone agonist as an effective alternative to surgical therapy [8]. Use of combined hormonal therapies decreased pain with endometriotic lesions [9]. Although there is no consensus regarding use of any particular therapies, Dienogest, an oral progestin, has shown significant relief in endometriosis related pain, reduction in recurrence of endometriosis and improved quality of life [10]. Klipping et al performed a pharmacokinetic study that confirmed 2 mg daily usage of Dienogest moderately suppressed estradiol levels [11]. Dienogest also reduces inflammation, fever and androgen levels [12]. Dienogest has predominantly been studied with a small sample size in Europe and Japan. Therefore, further studies must be conducted.

Conclusion

We present a case of recurrent catamenial pneumothorax after chest tube placements, pleurodesis and video-assisted thoracoscopic surgery (VATS) to increase provider awareness of this rare phenomenon, as well as highlight radiographic changes in pneumothorax appearance post-procedure. Recurrence is much more infrequent after invasive procedures, especially in female patients who abstain from smoking along with divergent radiographic findings but may not eliminate this risk as in our patient. Such patients should undergo hormonal suppression to prevent recurrence of catamenial pneumothorax.

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