CLINICAL VIGNETTE

A Case of Catamenial Pneumothorax in the Emergency Department

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Case Report

A 31-year-old African American female presented to the emergency department with five days of progressively worsening dyspnea and right-sided pleuritic chest pain. She denied paroxysmal dyspnea or orthopnea as well as recent travel, leg pain or swelling, fevers and cough. Menarche started at the age of 13 with menstrual flow for 4-5 days in a regular cycle length of 28-30 days. She does not have menorrhagia or dysmenorrhea with menstruation and her last menstrual period was 5 days prior to her emergency department visit. Patient denied any significant past medical history. However, she mentioned 3-4 prior episodes of mild shortness of breath and right-sided pleuritic chest pain that also coincided with the start of her menstrual period. These episodes spontaneously resolved and she did not seek medical attention.

Her vital signs were: BP = 130/81 HR = 78 RR=25 O2 Sat=91% on room air T=98.7
On examination, she was in mild respiratory distress with noted mild tracheal shift to the left. There were markedly decreased breath sounds on the right with hyper-resonance on percussion. Chest X-ray revealed a 60% pneumothorax on the right with mild mediastinal shift to the left (See figure 1).

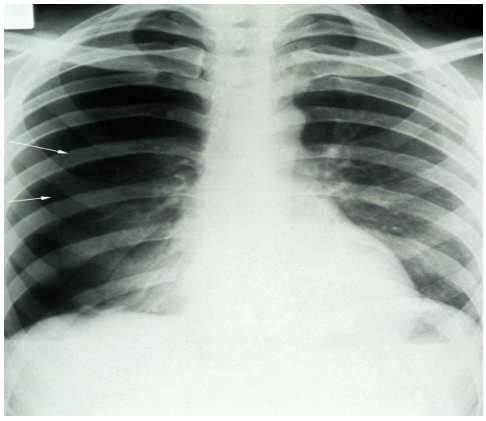

Figure 1: Depicted is a right-sided pneumothorax

A diagnosis of a spontaneous pneumothorax was made and a right-sided chest tube was placed to treat the pneumothorax. Two days after thoracostomy, air leak had resolved and lungs completely re-expanded on chest X-ray. The chest tube was removed and patient was discharged home.

Patient returned to the emergency department about 5 weeks later with recurrent dyspnea and right-sided pleuritic chest pain and was diagnosed with another pneumothorax which was treated the same ways as above. Again, the onset of the pneumothorax coincided with the start of her menses. Based on the cyclical nature of the pneumothorax in relation to her menstrual cycle, a diagnosis of catamenial pneumothorax was made. Upon discharge from the hospital, she was placed on hormonal therapy using oral contraceptive pills. There has been no recurrence of pneumothorax for almost a year.

Discussion

Recurrent spontaneous pneumothorax is a common disorder usually resulting from rupture of subpleural blebs. However, pneumothorax associated with menses is a rare disorder. Catamenial pneumothorax (CP) is a recurrent syndrome of pneumothorax that generally occurs between 48 and 72 hours after onset of menstruation[1]. Ninety percent of cases involve the right side and most women are between 30-40 years of age[2]. A recent study reported a 33% incidence of catamenial pneumothorax in women with spontaneous pneumothoraces[3]. The high incidence may reflect increasing awareness and screening for this disorder. This syndrome is linked to concurrent endometriosis. Catamenial pneumothorax was first described in 1958 by Mauer et al[4] after they noted erosive epiphrenic endometrial implants in their patients. Though most women with endometriosis have pelvic manifestations, a subset will have thoracic manifestations, the most common of which is catamenial pneumothorax.

Three theories have been proposed to explain how endometriosis leads to CP[3]: retrograde menstruation and implantation; entry and spread of endometrial cells into the venous system; and coelomic metaplasia. Diaphragmatic endometrial implants are suspected to cause diaphragmatic defects by erosive actions in response to hormonal changes. Dissolving cervical mucus plugs are hypothesized to allow the ascent of air through the fallopian tubes causing a transient pneumoperitoneum[1]. Air then escapes through the diaphragmatic defects into the pleural space resulting in CP.

Treatment of catamenial pneumothorax is optimally accomplished with a multi-disciplinary approach including hormonal and surgical options. Video-assisted thoracoscopy allows visual diagnoses, resection and treatment by endoscopic stapler devices[5]. Medical management involves use of hormonal treatment including oral contraceptives, progesterone derivatives, danazol, and gonadotropin-releasing hormone (GnRH) agonists in clinical practice. These work to block the hormonal support to endometrial implants preventing further seeding. However, the vast experience seems to be with gonadotropin-releasing hormone (GnRH) agonists[6]. Hormonal treatment such as use of GNRH agonist is recommended immediately after surgery for some for patients with proven catamenial pneumothorax. GnRH analogues induce hypogonadotropic hypogonadism and amenorrhea, causing suppression of ectopic endometrium activity[3, 7].

In conclusion, one should suspect a catamenial pneumothorax in ovulating females presenting with spontaneous pneumothorax in the emergency department, even in the absence of endometriosis symptoms. Catamenial pneumothorax accounts for a significant proportion of spontaneous pneumothorax in women. Treatment may include a combination of both medical and surgical approaches.

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