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Research Article

Diagnosis and Treatment of Catamenial Pneumothorax: A Report of a Single-Center Experience

Michos Thrasyvoulos^{1*}, Stamatelopoulos Athanasios¹, Roumpaki Anastasia², Vakouftsi Alexia- Christina¹, Chatziantoniou Christos¹, Gakidis Ioannis¹ and Michos Petros¹

¹General Thoracic Department, of General Hospital of Attica "KAT", Athens, Greece

²General Hospital of Athens "Evangelismos", Athens, Greece

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ABSTRACT

Introduction: Catamenial pneumothorax (CP) is defined as spontaneous pneumothorax occurring within 72 hours before or after the onset of menstruation. Its etiology is not well understood, and its management remains controversial.

Methods: A retrospective review was carried out in all female patients with spontaneous pneumothorax who were treated at our department, the last 20 years.

Result: Five patients were suffered of CP. The median age was 27.4 (21-33). The side of the pneumothorax was right in four patients and bilateral in one. None of them were diagnosed with endometriosis. Four were treated surgically, while the last one was managed conservatively. Small fenestrations on the central tendon of the diaphragm was found in one patient. The mean hospital stay was 6.2 days. The follow-up examination did not confirm any recurrence.

Conclusion: In this study, we investigated the clinical features of CP. A menstrual history and its temporal relation to a pneumothorax should be assessed on every woman presenting with recurrent pneumothorax. Surgical treatment must be selected as definitive for CP and must be combined with hormone therapy, as it prevents recurrence.

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Introduction

Catamenial pneumothorax (CP) is defined as spontaneous pneumothorax occurring within 72 hours before or after the onset of menstruation [1]. Although catamenial pneumothorax is the most common clinical manifestation of intrathoracic endometriosis, this latter condition is not universally identified in women with catamenial pneumothorax and cannot fully explain the recurrent and cyclical episodes of pneumothorax. Its aetiology is not well understood and its management remains controversial [2]. Theories are unproven but suggest that CP is caused by congenital diaphragmatic fenestrations that allow passage of air through the peritoneum to the pleura or pathologic intrathoracic endometrial implants that cause perforation of visceral pleura [3]. We conducted a retrospective analysis of 5 patients with CP within the last 20 years, between 1/1/1999-31/12/19, who were treated at Department

of General Thoracic Surgery of General Hospital of Athens "KAT", to determine the clinical features as well as the effect of treatment and recurrence rates.

Methods

A retrospective review was carried out in all female patients with pneumothorax who were treated at our Department. Five patients were suffered of CP. Four were treated surgically, while the last one was managed conservatively. CP was diagnosed as spontaneous, recurrent pneumothorax of women in reproductive age, occurring in temporal relationship with menses. The clinical findings were recurrent chest pain and / or discomfort. Standard chest X-ray was systematically performed and complemented in four cases by chest CT scan that showed apical bullae in addition to pneumothorax. Four of the patients were treated via

*Correspondence to: Michos Thrasyvoulos, M.D., Resident, Cardiothoracic Surgery, General Thoracic Surgery, Department of General Hospital of Attica, "KAT", Athens, Greece; E-mail: thr.michos@hotmail.gr

Video- Assisted Thoracoscopic Surgery (VATS), while the fifth one was subjected to a flexible bronchoscopy plus posterolateral mini-thoracotomy due to recurrence after VATS bullectomy. The fifth patient, who was managed with bilateral posterior thoracotomy due to bilateral CP at another Thoracic Department, was treated conservatively with high oxygen ventilation on grounds of recurrent pneumothorax and subcutaneous emphysema.

Result

The median age was 27.4 (21-33). The side of the pneumothorax was right in four patients (80%) and bilateral in one. Additionally, none of the patients were diagnosed with endometriosis. Three of them were treated via VATS bullectomy after 2-3 episodes of recurrent pneumothorax, which was managed with a chest tube. All three underwent mechanical and chemical pleurodesis with betadine – povidone solution, while biopsy of the resected blebs was performed. During the operation there were no visual findings of intrathoracic endometriosis or diaphragmatic fenestrations. The patients were discharged with a mean hospital stay of 5 days without receiving hormone therapy postoperatively. The follow-up examination up to 2 years did not confirm any recurrence. The fourth patient, a 21-year-old refugee, was operated on via posterior bilateral thoracotomy ascribed to bilateral CP at another Thoracic Department. She presented to the emergency room with subcutaneous emphysema, which was managed with oxygen therapy. After six days she was dismissed and after consultation with her gynaecologist she underwent hormone therapy for 6 months.



Figure 1: Small fenestrations on the central tendon of the diaphragm.

No recurrence has been mentioned 6 months after the completion of the hormone therapy. The fifth patient was operated on via a VATS bullectomy and pleurodesis, after two episodes of CP, which were managed with chest tube two years before. A flexible bronchoscopy was performed before the bullectomy because of incomplete expansion of the right lower lobe. Because of another episode of recurrent pneumothorax one year after the VATS procedure, the patient was operated on via a right posterolateral mini- thoracotomy. The findings were small fenestrations / holes on the central tendon of the diaphragm, which were

not being discerned in the initial VATS (Figure 1). Suturing of the fenestrations with PTFE - pledget running suture was the final treatment (Figure 2). She also underwent hormone therapy for 6 months during postoperative period, in order to suppress menstruations. Postoperative hospital stay was 10 days. After a follow-up period of 1 year the outcomes were satisfactory for the last patient who didn't display any symptom at the beginning of her menstrual cycles or radiological evidence of relapse.

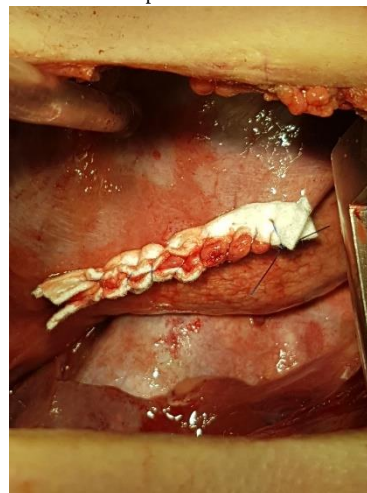


Figure 2: Suturing of the fenestrations with PTFE - pledget running suture.

Conclusion

In this retrospective study, we investigated the clinical features of CP. It is possible that many premenopausal female patients presenting with recurrent pneumothorax are misdiagnosed as spontaneous recurrent pneumothorax instead of CP. A menstrual history and its temporal relation to a pneumothorax should be assessed on every woman presenting with recurrent pneumothorax [2]. Surgical treatment must be selected as definitive for CP. Moreover, the surgeon must be looking for intrathoracic endometriosis or diaphragmatic fenestrations. In conclusion the surgical treatment must be combined with postoperative hormone therapy, as it prevents recurrence [4].

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