

Endometriosis-Related Massive Hemothorax and Ascites: Insights from a Clinical Case

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ABSTRACT

Thoracic endometriosis is the presence of endometrial tissue in the respiratory pathways, pleura, and pulmonary parenchyma. It is a rare condition typically characterized by catamenial pneumothorax, hemothorax, and pulmonary nodules. We present the case of a 32-year-old woman with thoracic endometriosis leading to catamenial hemothorax and ascites.

The diagnosis of thoracic endometriosis is challenging, and suspicion should arise in reproductive-age women exhibiting exacerbated respiratory symptoms during menstruation. Our case highlights the importance of considering thoracic endometriosis in the differential diagnosis of respiratory symptoms in women of reproductive age.

This article provides a detailed exploration of the clinical presentation, diagnostic intricacies, and management of thoracic endometriosis-induced catamenial hemothorax and ascites. By presenting this case, we aim to contribute to the awareness of atypical endometriosis manifestations, facilitating early diagnosis and appropriate management.

Keywords: Thoracic endometriosis; Catamenial hemothorax; Ascites

INTRODUCTION

Endometriosis is characterized by the abnormal implantation of endometrial tissue outside the uterine cavity^[1,2], typically affecting women of reproductive age^[3]. While it predominantly involves pelvic organs, it can extend to extra-pelvic sites, including the thorax, leading to Thoracic Endometriosis Syndrome (TES)^[2,3,4,5].

TES commonly presents with catamenial pneumothorax, hemothorax, hemoptysis, and pulmonary nodules^[2]. Catamenial pneumothorax occurs in the majority of cases (73%), while catamenial hemothorax is observed in only 14%^[6]. Frequent symptoms include thoracic pain, dyspnea, cough, hemoptysis, and scapular pain, typically manifesting between 1 day before and 2 to 3 days after the onset of menstruation^[7]. Diagnosing TES is

challenging, relying on anamnesis, imaging studies, and histopathological examination, although transient radiological abnormalities and the absence of specific diagnostic criteria pose difficulties^[2,3,4,8].

Management of TES involves both medical and surgical approaches, with surgical resection proposed in cases where medical treatment proves ineffective^[9].

CASE REPORT

A 32-year-old woman, mother of two, under long-term observation for dysmenorrhea and associated thoracic pain over the past decade, presented at the emergency department with right-sided thoracic pain accompanied by exertional dyspnea. During the physical examination, her blood pressure measured 100/60 mmHg, and her heart rate was 75 beats per minute. Pallor was observed in her skin and visible mucous membranes. Blood analyses revealed anemia (hemoglobin: 9 g/dl), leukocytes: 10,390, platelets: 437,000, and CRP: 23.

Chest X-ray revealed a substantial right pleural effusion (Figure 1). Subsequent thoraco-abdomino-pelvic computed tomography demonstrated a considerable right pleural effusion, moderate ascites, and a 15 mm right adrenal nodule (Figure 2).

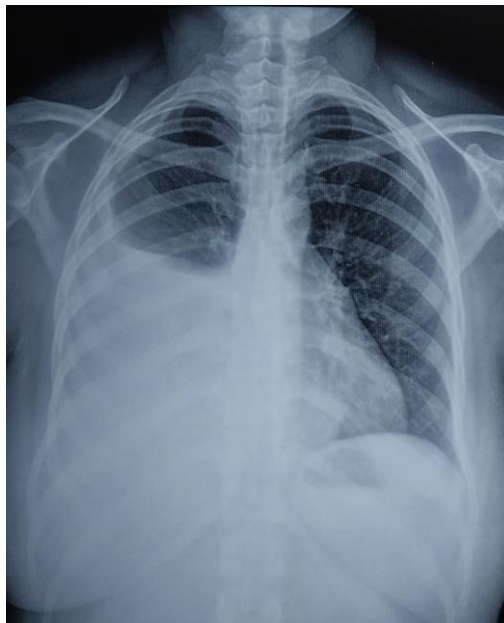


Figure 1: Chest X-ray illustrating a significant right pleural effusion.

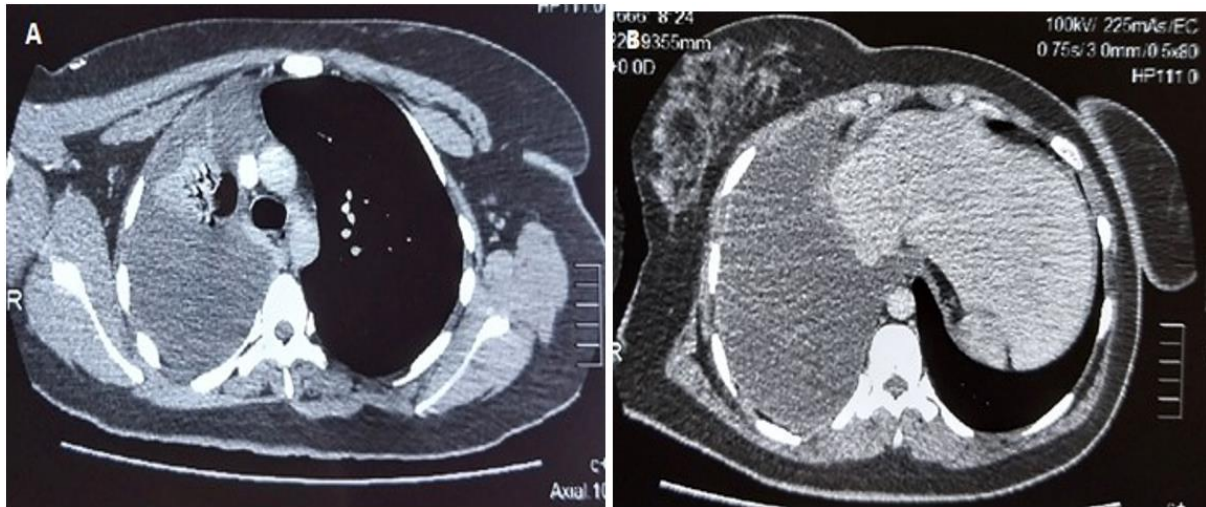


Figure 2: Thoracic CT scan revealing a large right hemothorax.

The patient underwent a pleural biopsy puncture with drainage of 2 liters of hematic fluid. Biochemical and bacteriological analyses indicated an exudative fluid with protein levels at 52.6 g/l, white blood cells at $1580/\text{mm}^3$ (70% lymphocytes), and negative direct examination but with the presence of abnormal cells ($40 \text{ elements}/\text{mm}^3$). Pleural histopathological examination revealed non-specific chronic pleuritis.

Hypovolemia was corrected through the transfusion of two units of red blood cells. The patient was subsequently admitted to the thoracic surgery department for further evaluation and treatment. Given her hemodynamic and respiratory stability, no urgent surgical intervention was deemed necessary. Prior to video-assisted thoracic surgery (VATS), an abdominal ultrasound revealed moderate ascites.

On the 2nd day of her menstrual cycle, the patient underwent VATS, which aspirated two liters of hematic fluid, revealing hemorrhagic pleural plaques on the parietal and diaphragmatic surfaces indicative of endometriosis (Fig 3). Multiple pleural biopsies were performed, accompanied by pleurodesis using talc.

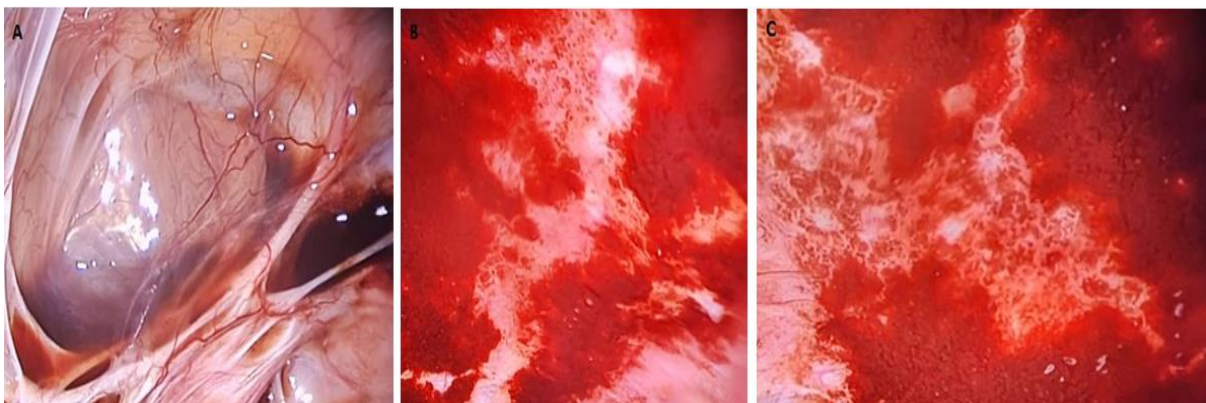


Figure 3: Thoracoscopic images revealing endometriotic pleural lesions.

Histopathological examination confirmed the diagnosis of pleural endometriosis. The patient's postoperative course was uneventful, with no recurrence of postoperative hemothorax during hospitalization and three months

thereafter. The patient was subsequently referred to the gynecology department for additional medical management.

DISCUSSION

Endometriosis typically affects pelvic organs, but its manifestation in extra-pelvic tissues is documented^[4,5]. Thoracic Endometriosis Syndrome (TES), marked by the presence of endometrial implants in the respiratory pathways, pleura, and pulmonary parenchyma, encompasses catamenial pneumothorax, catamenial hemothorax, catamenial hemoptysis, and pulmonary nodules^[2,8].

The majority of patients commonly experience catamenial pneumothorax (73%), followed by catamenial hemothorax (14%), hemoptysis (7%), and pulmonary nodules (6%)^[12]. Additionally, TES is often linked with pelvic endometriosis and infertility^[9]. In our case, the patient presented with right-sided hemothorax, and her medical history strongly indicated endometriosis.

Several theories attempt to explain the occurrence of thoracic endometriosis, including lymphatic or hematogenous migration from the uterus, coelomic metaplasia, and retrograde menstruation leading to the migration of endometrial tissue into the pleural cavity through diaphragmatic defects^[4,8].

Thoracic endometriosis is an uncommon condition, and its diagnosis is frequently delayed. Anamnesis, imaging studies, and histopathological examination^[2,3,7] play pivotal roles in diagnosing thoracic endometriosis. Symptoms such as thoracic pain, dyspnea, cough, hemoptysis, and scapular pain are common in patients with thoracic endometriosis^[4]. These symptoms typically occur between 1 day before and 2 to 3 days after the onset of menstruation^[7], but may also manifest during the intermenstrual period^[4]. Moreover, these symptoms may overlap with other pulmonary conditions like malignant lung tumors or tuberculosis^[4]. Physical examination often reveals diminished or absent breath sounds on the affected side^[2]. Chest X-ray may yield normal results^[3] or nonspecific findings such as pneumothorax, pleural effusions, or pulmonary nodules^[2]. Ultrasound also plays a crucial role in diagnosing endometriosis^[1], particularly when thoracic endometriosis coexists with pelvic and abdominal endometriosis. In our case, the patient complained of right-sided abdominal and chest pain, and dyspnea. Her chest X-ray revealed right-sided pleural effusion, while abdominal ultrasound showed ascites.

Thoracic computed tomography (CT) and magnetic resonance imaging (MRI) have also been employed for diagnosing thoracic endometriosis^[2]. However, it's essential to note that radiological abnormalities are transient^[4]. CT is the primary imaging method, though it lacks specificity^[10]. The scan may reveal endometrial implants (hypodense areas), ground-glass infiltrates, single or multiple nodular lesions, or cystic formations^[2,3]. The primary role of thoracic CT is to exclude other pulmonary diseases^[10]. MRI is superior to thoracic CT in detecting thoracic endometriosis, displaying hyperintense lesions on T1 and T2-weighted images^[11]. In our case, a thoraco-abdomino-pelvic CT scan was performed, revealing a significant right pleural effusion associated with ascites.

Cytological examination of pleural fluid is rarely useful^[12]. The role of bronchoscopy in diagnosing endometriosis is limited, as most pathological features are located peripherally^[2]. Histological confirmation of endometriosis is challenging; according to the literature, histological diagnosis can only be obtained in 1/3 of cases^[8]. Video-assisted thoracic surgery (VATS) can be used for direct visualization of endometrial lesions in the thorax and for performing multiple biopsies^[13].

Treatment options for TES include medical, surgical, and combined approaches. Medical treatment focuses on suppressing ovarian estrogen secretion^[2]. Danazol and gonadotropin-releasing hormone (GnRH) agonists are employed for this purpose^[2,3].

In the case of hormonal therapy failure, surgical treatment is proposed^[2,9]. VATS or standard thoracotomy may be performed^[9]. Some authors suggest chemical pleurodesis in the presence of pleural effusion, hemothorax, and pneumothorax before major surgical interventions^[14]. More aggressive surgical treatments include excision of ectopic endometrial tissue, closure of diaphragmatic defects, abrasion of pleural surfaces, and pleurectomy^[9,13]. Ectopic endometrial implants in the lungs are removed through wedge resection or limited pulmonary segmentectomy^[15]. In our case, successful pleural biopsies with pleurodesis using talc via VATS were performed, and there was no recurrence of respiratory symptoms.

CONCLUSION

Diagnosing Thoracic Endometriosis Syndrome (TES) is a complex and often delayed process. It should be considered in reproductive-age women experiencing intensified symptoms during menstruation. A meticulous focus on a comprehensive medical history, particularly a detailed gynecological history, alongside thorough physical and radiological examinations, is crucial. Ideally, addressing TES should initiate with medical interventions. In cases where medical therapies fall short, surgical interventions become necessary. We advocate for the timely application of Video-assisted Thoracic Surgery (VATS) in reproductive-age women with an unknown origin of pneumothorax or hemothorax. This approach allows for the exploration of pleural cavity lesions, ensuring the timely initiation of appropriate treatment.

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