



Catamenial Hemoptysis Managed With Medroxyprogesterone Acetate: A Management Dilemma

Ashwin Rao^{1*}, Rashmi Rao¹

Abstract

Introduction: Endometriosis is the deposition of endometrial glands and stroma outside the uterus and can be of pelvic or extra-pelvic type. Thoracic endometriosis syndrome (TES) is associated with endometriosis in the pleura or the lungs, as well as cyclical pneumothorax, chest pain, haemoptysis, and pulmonary nodules. TES can be misdiagnosed for the more prevalent pulmonary tuberculosis in countries such as India.

Case Report: A married woman aged 26 years old was presented with complaints of hemoptysis and chest pain during menstruation. On further investigations, she was diagnosed with pulmonary endometriosis after ruling out tuberculosis and Wegener's granulomatosis. The patient was treated with depot Medroxyprogesterone acetate and regestrone since she was unwilling for surgical management. The significant change in management is that most cases of pulmonary endometriosis have been managed surgically whereas our case has been successfully managed medically.

Conclusions: This case is an example for successful medical management of pulmonary endometriosis in patients who cannot or do not want to undergo a bilateral oophorectomy and a possible thoracotomy. Surgical management with bilateral oophorectomy is associated with premature menopausal symptoms, increased risk of cardiovascular diseases, and obesity. In cases of subfertility or in nulliparous women, the medical management of pulmonary endometriosis gives women a chance at fertility in the future.

Keywords: Thoracic endometriosis syndrome, Extra-pelvic endometriosis, Medroxyprogesterone acetate, Tuberculosis, High-resolution computed tomography

Introduction

Endometriosis can be described as the deposition of functional tissue of the endometrium or glands in areas other than the uterus (1). There are two types of endometrial tissue depositions, namely, pelvic and extra-pelvic. The deposition of glands in the ovaries, fallopian tubes, and their associated peritoneum is referred to as pelvic endometriosis. Extra pelvic endometriosis is extremely rare and generally involves the gastrointestinal and urinary tracts. The other involved sites are the lungs, central nervous system, surgical scars, and the skin. Endometriosis is estrogen-dependent, and there are many theories describing its pathogenesis (2). It generally affects 5-10% of women in the third decade of life (3).

When glands from the endometrium deposit in the lungs or the pleura, it is called thoracic endometriosis syndrome (TES). It is a rare type of endometriosis characterized by catamenial pneumothorax, hemoptysis, pneumothorax, and pulmonary nodules (4) and is commonly mistaken for tuberculosis endemic in countries such as India. This report describes the scenario of a woman aged 26 years old with endometriosis who was presented with dyspnea, hemoptysis, and chest pain.

Case Report

A married woman aged 26 years with two previous vaginal births was presented with complaints of hemoptysis, chest pain, and dyspnea for about 4 months which was most severe during menstruation and subsided slowly by day 5 or 6 of the menstrual cycle. There was also a history of dysmenorrhea for the last 3 years although there was no history of fever, loss of weight, or loss of appetite. Her symptoms had initially begun about 8 months after the birth of her second child and the hemoptysis and chest pain had progressively increased over a period of time. Suspecting that she might have contracted pulmonary tuberculosis, she underwent anti-tubercular therapy by a general practitioner 4 months ago although she did not improve symptomatically. Then, she was presented with amenorrhea for about two months. Since she did want to continue with the pregnancy, she requested for the termination of pregnancy and permanent sterilization. On detailed history taking, it was found that during the two months of amenorrhea, hemoptysis had subsided. She did not visit the hospital initially thinking that the hemoptysis had subsided because of anti-tubercular therapy. Her complete blood count, erythrocyte sedimentation rate, coagulation profile, and liver and kidney functions were



found to be normal. She underwent medical termination of pregnancy and sterilization. About two months after termination and sterilization, she presented the relapse of previous symptoms. Hence, she underwent further evaluations. Based on investigations for tuberculosis, the erythrocyte sedimentation rate was normal, and tuberculosis polymerase chain reaction was found to be negative for mycobacterium tuberculosis. The chest radiograph was unremarkable. The ultrasound examination of the abdomen and pelvic showed a bulky uterus with thick endometrium and a clear cyst measuring 2*3 cm for the right ovary. The ultrasonography was otherwise unremarkable. Her CA-125 was 30.2 U/mL. Since she had dyspnea during menstruation, a spirometry was performed, which revealed a reduction in the maximum mid-expiratory flow suggesting early small airway obstruction. The high-resolution computed tomography (HRCT) thorax represented multiple well-defined rounded nodules contacting varying degrees of cavitation in both lung fields (Figures 1 and 2). To rule out Wegener's granulomatosis, the serum was checked for C and P ANCA antibodies and anti-myeloperoxidase antibodies which were also negative. Hence, the possibility of pulmonary endometriosis was considered for her. Progesterone therapy was advised as she was unwilling for the bronchoscopy guided biopsy of the lesions and bilateral salpingo-oophorectomy. She was given a 300 mg depot injection of Medroxyprogesterone acetate (MPA) every 10 weeks and 5 mg tablets of Regestrone daily so that she did not develop breakthrough bleeding. She improved symptomatically. Then, papanicolaou (Pap) smear and pipelle biopsy were taken at the end of 1 year which were found to be normal. The depot injection of MPA was reduced to 150 mg every 10 weeks and the same dose of Regestrone was continued for 30 weeks. Next, depot MPA was stopped while Regestrone was continued for 12 weeks and then stopped. She was given calcium and vitamin D supplementation during the entire course of the treatment. She regained her menstruation 8 months later but there was no hemoptysis, chest pain, or dyspnea. As she could not afford to repeat an HRCT thorax, she was advised to review on a yearly basis for a PAP smear and pipelle biopsy or earlier if she developed her previous symptoms of hemoptysis and chest pain.

Discussion

TES is a rare cause of hemoptysis in countries such as India as endometriosis, as such, is more common in patients who belong to the upper social class. TES is of two pleural and pulmonary types. The pleural form is associated with cyclic pneumothorax, chest pain, and hemothorax whereas the pulmonary form is associated with cyclical hemoptysis and lung nodules. The pathophysiology of endometriosis in the thoracic cavity can be explained by a few theories. The mesothelial cells of the pleura can

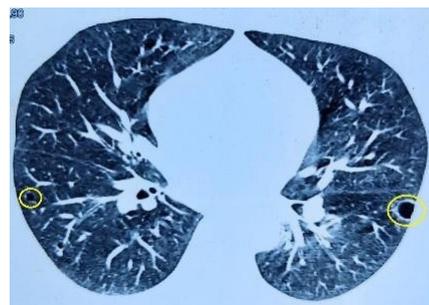


Figure 1. HRCT Displaying Pulmonary Nodules. Note. High-resolution computed tomography.

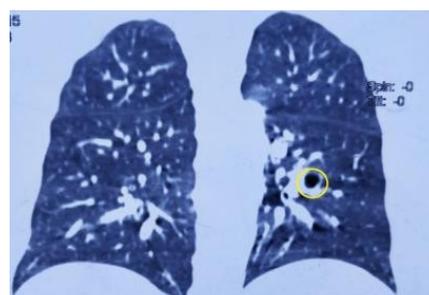


Figure 2. HRCT Showing Blood in the Bronchioles. Note. High-resolution computed tomography.

undergo metaplasia into endometrial cells as explained by metaplasia theory (5). The endometrial glands can also be disseminated by the lympho-hematogenous spread (6). The prostaglandin theory describes prostaglandin F_{2α} which causes bronchoconstriction leading to the rupture of alveolar blebs resulting in catamenial pneumothorax (7). The HRCT is the imaging modality which is generally used to detect the endometriotic tissue in the pleura and the lung. Concurrently, an ultrasonography of the pelvic is applied to detect the presence of the endometriotic tissue in the pelvic since pelvic and pulmonary endometriosis can co-exist (8). However, the magnetic resonance imaging of the thorax and pelvic is better since they detect blood products in the deposits (9). It is observed that cancer antigen 125 (CA-125) is elevated when there is an irritation of the peritoneum in cases of the benign and malignant neoplasm of the peritoneum, pelvic inflammatory disease, tuberculosis, and endometriosis (10). Although bronchoscopy-guided biopsy can be performed for confirming the presence of the endometrial tissue, the peripheral location of the deposits instead of the large bronchi limits its use (11). Medical or surgical management can be considered for endometriotic deposits in the thoracic cavity. The main goal of medical management is to bring about endometrial hypoplasia. It can be achieved with drugs such as progestins, gonadotropin-releasing hormone (GnRH) analogues, GnRH antagonists, oral contraceptive pills, aromatase

inhibitors, and danazol (12). The medical management of endometriosis requires high compliance and follow-ups. However, more studies are required to devise the correct protocol regarding managing endometriotic deposits in the thoracic cavity using drugs. Therefore these deposits can be surgically managed by performing a bilateral oophorectomy wherein a fall is observed in the estrogen levels, leading to the shrinking of endometrial glands (13). In addition, superficial thoracic lesions can be fulgurated using bipolar energy or lasers. Larger lesions involving the pulmonary tissue may require wedge resections or in rare cases-a lobectomy (14).

Endometriotic deposits in the thoracic cavity are rarely observed, and hence, it a diagnosis of exclusion. In countries such as India where tuberculosis is highly prevalent, pulmonary endometriosis can be misdiagnosed as pulmonary tuberculosis. Accordingly, thoracic endometriosis should be considered among women who are in the reproductive age group with a history of dysmenorrhea, hemoptysis and chest pain. Recently, the number of cases with subfertility due to endometriosis have been increased and thus medical management needs to be considered seriously. Moreover, the removal of the ovaries causes sudden menopausal symptoms which can be quite distressing for the woman, leading to the need for hormone replacement therapy. Therefore, the surgical management of endometriosis should be considered only if the medical therapy fails to be effective.

Authors' Contribution

AR: Collection of data and drafting the article; RR: Revising it critically and providing final approval of the version.

Conflict of Interests

Authors declare that they have no conflict of interests.

Ethical Issues

Informed consent was obtained from the patient.

References

1. Agarwal N, Subramanian A. Endometriosis - morphology, clinical presentations and molecular pathology. *J Lab Physicians*. 2010;2(1):1-9. doi:10.4103/0974-2727.66699
2. Kitawaki J, Kado N, Ishihara H, Koshiha H, Kitaoka Y, Honjo H. Endometriosis: the pathophysiology as an estrogen-dependent disease. *J Steroid Biochem Mol Biol*. 2002;83(1-5):149-155. doi:10.1016/s0960-0760(02)00260-1
3. Engemise S, Gordon C, Konje JC. Endometriosis. *BMJ*. 2010;340:c2168. doi:10.1136/bmj.c2168
4. Veeraswamy A, Lewis M, Mann A, Kotikela S, Hajhosseini B, Nezhat C. Extragenital endometriosis. *Clin Obstet Gynecol*. 2010;53(2):449-466. doi:10.1097/GRF.0b013e3181e0ea6e
5. Matsuura K, Ohtake H, Katabuchi H, Okamura H. Coelomic metaplasia theory of endometriosis: evidence from in vivo studies and an in vitro experimental model. *Gynecol Obstet Invest*. 1999;47 Suppl 1:18-20. doi:10.1159/000052855
6. Ueki M. Histologic study of endometriosis and examination of lymphatic drainage in and from the uterus. *Am J Obstet Gynecol*. 1991;165(1):201-209. doi:10.1016/0002-9378(91)90252-m
7. Rakhila H, Al-Akoum M, Bergeron ME, et al. Promotion of angiogenesis and proliferation cytokines patterns in peritoneal fluid from women with endometriosis. *J Reprod Immunol*. 2016;116:1-6. doi:10.1016/j.jri.2016.01.005
8. Chung SY, Kim SJ, Kim TH, et al. Computed tomography findings of pathologically confirmed pulmonary parenchymal endometriosis. *J Comput Assist Tomogr*. 2005;29(6):815-818. doi:10.1097/01.rct.0000176014.37051.c7
9. de Paula MC, Escuissato DL, Belém LC, et al. Focal pleural tumorlike conditions: nodules and masses beyond mesotheliomas and metastasis. *Respir Med*. 2015;109(10):1235-1243. doi:10.1016/j.rmed.2015.06.004
10. Chen FP, Soong YK, Lee N, Lo SK. The use of serum CA-125 as a marker for endometriosis in patients with dysmenorrhea for monitoring therapy and for recurrence of endometriosis. *Acta Obstet Gynecol Scand*. 1998;77(6):665-670. doi:10.1034/j.1600-0412.1998.770615.x
11. Tripp HF, Thomas LP, Obney JA. Current therapy of catamenial pneumothorax. *Heart Surg Forum*. 1998;1(2):146-149.
12. Marshall MB, Ahmed Z, Kucharczuk JC, Kaiser LR, Shrager JB. Catamenial pneumothorax: optimal hormonal and surgical management. *Eur J Cardiothorac Surg*. 2005;27(4):662-666. doi:10.1016/j.ejcts.2004.12.047
13. Azizad-Pinto P, Clarke D. Thoracic endometriosis syndrome: case report and review of the literature. *Perm J*. 2014;18(3):61-65. doi:10.7812/tpp/13-154
14. Kristianen K, Fjeld NB. Pulmonary endometriosis causing haemoptysis. Report of a case treated with lobectomy. *Scand J Thorac Cardiovasc Surg*. 1993;27(2):113-115. doi:10.3109/14017439309098701

© 2021 The Author(s); This is an open-access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.