

CASE REPORT

Pulmonary Endometriosis – a Rare Differential Diagnosis of Lung Cancer

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SUMMARY

Endometriosis is characterised by the presence of ectopic functional endometrial tissue outside the uterus. The disease most frequently affects pelvic tissues and organs but any site can be involved including gastrointestinal tract, lungs and other organs. Extra-pelvic endometriosis mostly occurs in females aged 35-40 years. Here we report a well-documented, morphologically proved and surgically treated case of pulmonary endometriosis in a 50-year-old woman in order to heighten the awareness of endometriosis as the differential diagnosis for nodular lung lesions.

Key words: endometriosis, lung, lung tumour, differential diagnosis

AIM OF THE DEMONSTRATION

The aim of this demonstration is to report a rare case of extra-pelvic endometriosis in order to increase the awareness about endometriosis as the differential diagnosis of lung cancer.

CASE REPORT

A fifty-year-old female underwent routine chest roentgenography. As a peripheral nodule was disclosed in her left lung, the family doctor referred the patient to thoracic surgeon. To decide about the further assessment and treatment strategy, chest computed tomography was performed repeatedly after a month. However, the diagnosis was not clear and tumour could not be ruled out completely, therefore the lady was admitted to the hospital for surgical treatment.

The patient had no complaints. However, on detailed questioning she recalled occasional, dry cough. The lady had had no treatment or specific examination due to non-disturbing intensity of these symptoms, and also was unable to describe the duration of the cough. Her gynaecological anamnesis was characterised by irregular menstruations during the last year. Previously, her menstrual cycle was regular, with the average duration 28 days and bleeding of normal intensity lasting 3-4 days. The menstrual bleeding was not preceded by or associated with pain, and the patient did not reveal use of any hormonal medications. She had had three pregnancies of which one resulted in term birth but two were terminated by medical abortion.

By laboratory investigation, the levels of red blood cells (RBC), white blood cells and platelets as well as biochemical parameters (ASAT, ALAT, creatinine, sodium, potassium, C-reactive protein) were within laboratory reference ranges. The gynaecologic ultrasound evaluation data were consistent with uterine adenomyosis and endometrioid cyst of the right ovary, measuring 2.0x1.7 cm. The pulmonary function tests yielded no abnormality. By thoracic radiography, sharply demarcated smooth nodule, measuring 2.2

cm in diameter, was detected in the 8th segment of the left lung. Thoracotomy and marginal resection of the affected segment was performed. Cytological smear of the operation material showed cylindrical epithelial cells and groups of proliferating cells with traits of atypia on a RBC-rich background. Cytologist thus could not exclude malignant tumour. The resected lung fragment with a collapsed subpleural cavity measuring 1 cm in diameter was submitted to the pathological examination. By histology, the resection margins were composed of lung tissue lacking any disease process. The wall of the cystic nodule had dual structure with hypercellular stroma which consisted of small spindled cells and dilated cystic glands lined by low cubic epithelium (Fig. 1). None of these components showed cell atypia. By immunohistochemistry, the pathological tissues expressed oestrogen and progesterone receptors but lacked pulmonary markers including TTF-1 (Fig. 2). The proliferation fraction (by Ki-67) and oncoprotein spectrum (p53, Bcl-2) did not suggest malignant tumour. Thus, endometriosis was diagnosed in accordance with the morphological structure and immunophenotype. There were no postoperative complications. The patient was released from hospital on 9th postoperative day for further treatment under supervision of gynaecologist with the final diagnosis of nodular endometriosis in the 8th lung segment.

DISCUSSION

Endometriosis is an oestrogen-dependent disease characterized by functional endometrial tissue outside the uterus. Most commonly it affects pelvic tissues and organs but any system can be involved, including gastrointestinal tract, kidneys, spleen, lungs and other sites. The cause of endometriosis is largely unknown. Its incidence in the developed Western countries is increasing during the previous 4-5 decades [Porth, 2011]. The disorder mostly develops during reproductive age. Its prevalence has been estimated as 1-10% of women reaching even 15-25% among

infertile ladies [Ellenson *et al.*, 2010; Machairiotis *et al.*, 2013]. Extra-pelvic endometriosis is more frequent in females aged 35-40 years. The clinical picture can be variable depending on the localization of endometriosis but particularly it is characterized by abnormal bleeding or pain [Machairiotis *et al.*, 2013]. In recent years, treatment of extra-pelvic endometriosis has shifted from medical management toward a surgical approach as surgery clearly improves disease outcome [Veeraswamy *et al.*, 2010].

Endometriosis of the lung is rare. About 150 cases have been reported in the lungs and pleura; pleural endometriosis is by far the commonest type among these [Bergqvist, 1993; Sutton *et al.*, 2006]. The patients may present with symptoms such as shortness of breath, chest pain or they may be asymptomatic [Nezhat *et al.*, 2012]. An important diagnostic issue includes the cyclic nature of the symptoms which frequently occur along with the menstrual cycle. Regarding the association with menstrual cycle, the thoracic endometriosis can manifest as catamenial pneumothorax, haemothorax, chest pain or haemoptysis, non-catamenial endometriosis-related pneumothorax and lung nodules [Rousset *et al.*, 2014]. Distant spread of endometriosis is explained by hypothesis of venous or lymphatic circulation [Augoulea *et al.*, 2008; Huang *et al.*, 2013] despite the fact that endometriosis is not a malignant tumour.

Pulmonary endometriosis requires careful differential diagnosis, including lung cancer [Yu *et al.*, 2013]. In our case, the characteristic catamenial complaints were absent and the menopausal age was not typical for endometriosis causing further confusion. Pulmonary endometriosis is a diagnosis of exclusion. Neither computed tomography nor endoscopy is specific for it [Augoulea *et al.*, 2008]. Magnetic resonance imaging can be superior by showing haemorrhage [Rousset *et al.*, 2014]. For the establishing of diagnosis it is important to interpret clinical and radiological data together with morphological investigation from the biopsies or operation material.

In conclusion, the reported case represents an unusual distant extra-pelvic manifestation of nodular pulmonary endometriosis in an atypical age. Increased awareness of this diagnosis is necessary to avoid over-diagnosis of lung cancer. Morphologic evaluation represents the gold standard of evidence-based diagnosis, and can be further supported by immunohistochemistry.

Conflict of interest: None

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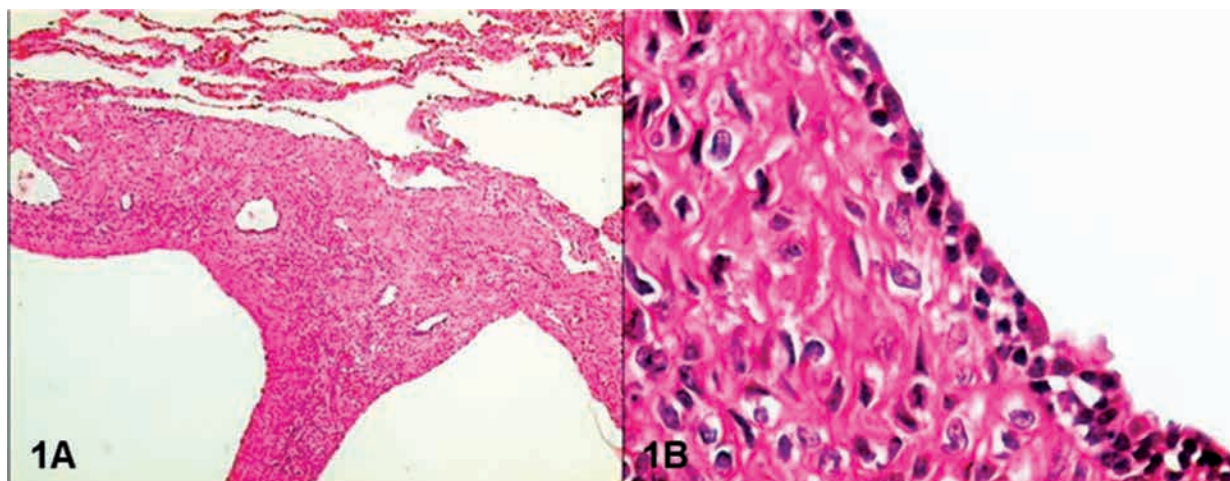


Fig. 1. Tissue structure of the pulmonary endometriosis. 1A. Overview of the cystic and nodular architecture. Haematoxylin-eosin (HE), original magnification (OM) 50x. 1B. Fragment of endometrial cyst wall lined by low cubical epithelium. Note the lack of cell anaplasia. HE, OM 400x.

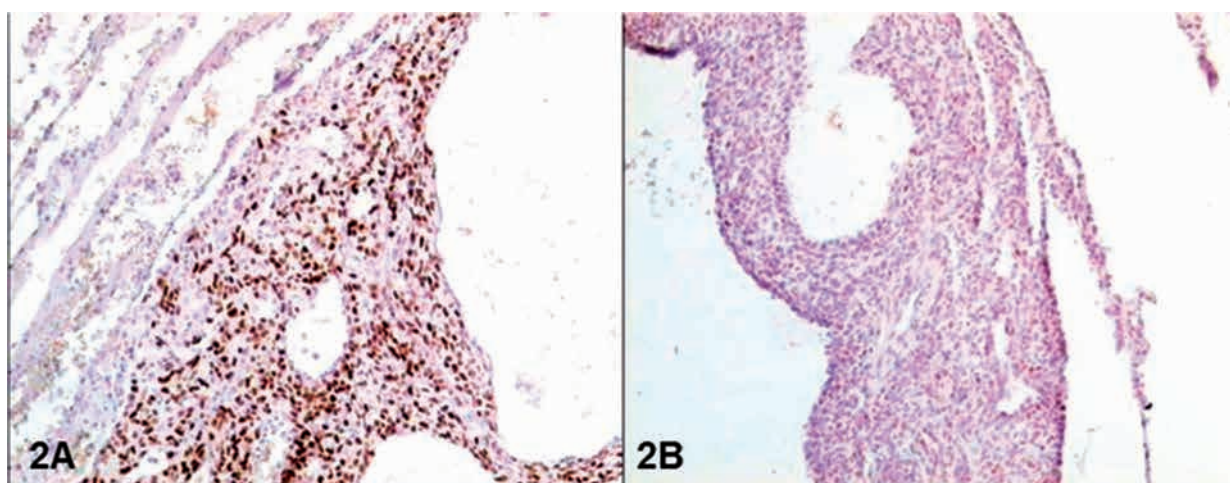


Fig. 2. Immunophenotype of pulmonary endometriosis. 2A, Progesterone receptor (PR) expression in pulmonary endometriosis. Note the lack of reactivity in lung tissues. Immunoperoxidase (IP), anti-PR, OM 100x. 2B, Absence of TTF-1 in the endometriosis cells. IP, anti-TTF-1, OM 100x.