Endometriosis: a rare cause of multiple lung nodules on imaging

Introduction

A previously healthy 48-year-old woman presented to her GP with flu-like symptoms, fatigue and cough, and was subsequently found to have suspicious nodules on chest radiograph. The patient was worked up by the cancer of unknown primary service – a multidisciplinary team of doctors and nurses which coordinates the care and management of patients who present with imaging suggestive of metastatic disease in the absence of an obvious primary. She went on to have further imaging and a lung biopsy which confirmed a diagnosis of endometriosis.

This unusual presentation of endometriosis, which most commonly manifests as pelvic pain or infertility, highlights the importance of multidisciplinary team working and the close correlation of the clinical picture with histopathological and radiological findings.

Discussion

Endometriosis is characterized by the presence of endometrial tissue outside the uterine cavity: when found in the thorax it is termed thoracic endometrial syndrome, the symptoms of which are typically cyclical and recurrent, with a right-sided predominance. It can present as pneumothorax, haemothorax, haemoptysis and lung nodules (Azizad-Pinto and Clarke, 2014).

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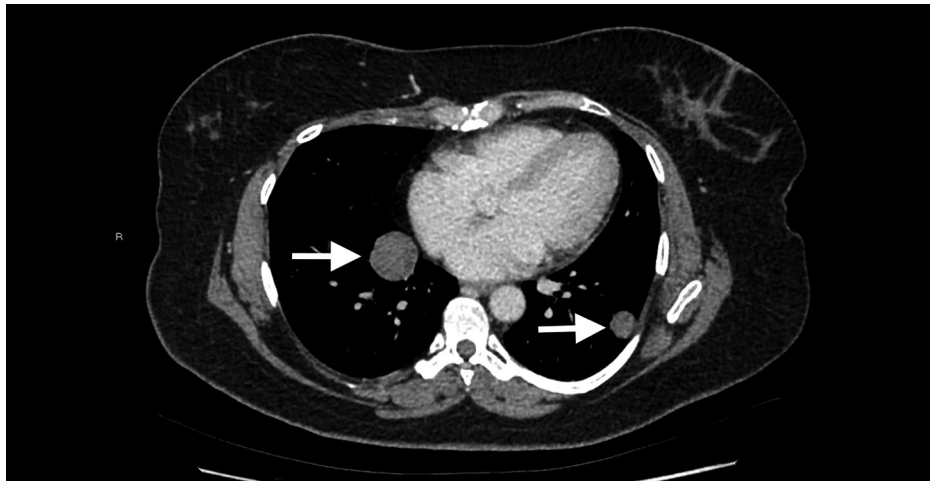
Figure 1. Axial contrast-enhanced computed tomography of the thorax demonstrated multiple large rounded soft tissue nodules throughout both lungs (arrows), suggestive of intrapulmonary metastases. Some lesions were subtly internally heterogeneous and a solitary focus of calcification was present in one lesion (not shown).



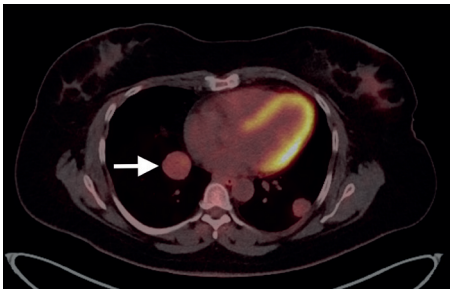
CASE REPORT

A 48-year-old woman with a 30-pack year smoking history presented to her GP with flu-like symptoms, fatigue and a chronic non-productive cough. There were no abdominal or gynaecological symptoms. There was no significant past medical history. A chest radiograph showed multiple rounded opacities within the lungs reported as highly suspicious for metastatic disease. She was therefore referred to and investigated by the cancer of unknown primary service. At the time of review, approximately a week later, the most remarkable aspect of her history was that her symptoms had improved and in fact almost resolved. However, despite the clinical improvement the consensus was that the radiological findings could not be ignored and warranted further investigation. She therefore underwent computed tomography of the chest, abdomen and pelvis which confirmed multiple pulmonary nodules of varying size, again reported as highly suspicious of metastatic disease (*Figure 1*).

Somewhat unusually the lesions were slightly lower in density (40–50 Hounsfield units) than normal soft tissue (muscle, 60–70 Hounsfield units). There was, however, no evidence of malignancy below the diaphragm, although an enlarged uterus secondary to fibroids was noted. She subsequently had an 18FDG positron emission tomography-computed tomography both to characterize the lung lesions further in terms of metabolic activity and to look for other sites of disease. This demonstrated only a moderate increase in metabolic activity of these lung nodules and again no primary malignancy was identified (*Figure 2*).

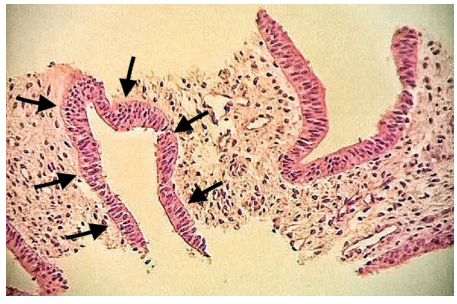
Given the unclear aetiology of the lung nodules a percutaneous biopsy was performed which showed normal alveolar lung tissue with focal collections of endometrial-like glands and stroma (*Figure 3*), in keeping with a non-malignant diagnosis of endometriosis. Importantly, there was no evidence of invasive malignancy which fitted completely with the cancer of unknown primary team's assessment of a clinically well patient with no ongoing sinister features in the history to suggest a cancer diagnosis. Thus, the close correlation between the clinical history and the histopathological findings allowed the radiological findings to re-interpreted. The patient was referred to her local gynaecology service around 1 month later and was offered hormonal treatment. However, the patient declined on the grounds that her symptoms had resolved and she was subsequently discharged.

Figure 2. 18FDG positron emission tomography-computed tomography showed that the lung lesions were FDG avid, for example the largest lesion within the right lower lobe (arrow) had standardized uptake values (SUV)-max of 4.9. Aside from the pulmonary nodules no other site of abnormal uptake was identified.



Nodules are a particularly uncommon manifestation, seen in only 6% of cases in a series of 110 patients (Joseph and Sahn, 1996). The most common symptom from nodules is haemoptysis which may occur with menstruation. Nodules tend to be round and of soft tissue density but cavitation has been reported (Lee et al, 2009). The mechanism of endometrial tissue reaching the thorax is uncertain but hypotheses including reflux from menstruation through diaphragmatic fenestrations, coelmic metaplasia and veno-lymphatic embolization have been proposed (Vinatier et al, 2001). Treatment is hormonal in the first instance and surgical if symptom control is not achieved. BJHM

Figure 3. Endometrial glands lined by pseudostratified epithelium (arrows) within cellular stroma. Haematoxylin and eosin stain 40x (high power magnification).



LEARNING POINTS

- This case highlights that patients benefit from a multidisciplinary approach (in this case oncology, interventional radiology, gynaecology and histopathology) to ensure a fast and accurate treatment plan. A cancer diagnosis was confidently excluded and the patient was referred for ongoing specialist input.
- The differential diagnoses of multiple pulmonary nodules include a range of malignant and benign diseases including infections, non-infectious inflammatory conditions and metastases from solid organ primary tumours.

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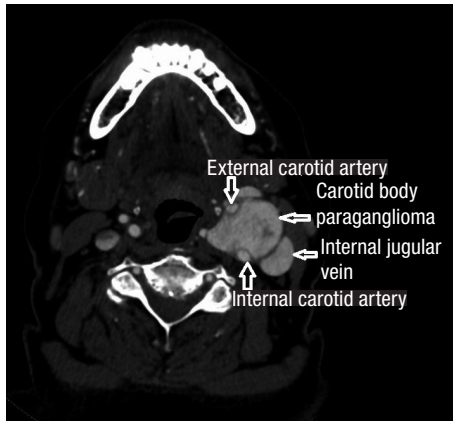
Lee C-H, Huang Y-C, Huang S-F, Wu Y-K, Kuo K-T (2009) Thoracic endometriosis: rare presentation as a solitary pulmonary nodule with eccentric cavitations. *Thorax* **64**(10): 919–920. https://doi.org/10.1136/thx.2008.111294

Vinatier D, Orazi G, Cosson M, Dufour P (2001) Theories of endometriosis. *Eur J Obstet Gynecol Reprod Biol* **96**(1): 21–34. https://doi.org/10.1016/S0301-2115(00)00405-X

Carotid body paraganglioma: a rare pathology but not to be forgotten

A 69-year-old woman presented to the vascular clinic (via an ear, nose and throat referral) with an asymptomatic unilateral neck lump which she had had for some months. On examination there was a painless, firm, well-defined 3 cm mass in the left neck anterior triangle. It had a transmitted pulsation. Before clinic, erroneously a fine needle aspiration was done which did not yield any useful cellular material. Ultrasound confirmed a vascular lesion splaying the carotid bifurcation. Computed tomography angiogram revealed a 34 x 27 mm mass splaying the left internal carotid artery and external carotid artery, findings consistent with a carotid body paraganglioma (*Figure 1*).

Figure 1. Cross-section image of computed tomography angiogram of neck.



Needle biopsies of carotid body paragangliomas can be harmful as they may cause severe bleeding, although not in this case. Carotid body paragangliomas are rare, but there should be a high degree of clinical suspicion for them if a patient has a mass in the anterior triangle. Differential diagnosis includes deep cervical lymphadenopathy or a carotid artery aneurysm. BJHM

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Further reading

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Naik SM, Shenoy AM, Halkud R, Chavan P, Sidappa K, Amritham U, Gupta S (2013) Paragangliomas of the carotid body: current management protocols and review of literature. *Indian J Surg Oncol* **4**(3): 305–312. https://doi.org/10.1007/s13193-013-0249-4