CASE OF THE MONTH

An uncommon case of an extra-axial mass

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A 46-year-old woman presented with progressive back pain and lower leg numbness. Following initial investigation with CT, which revealed destructive lytic lesions at multiple vertebral body levels, further characterisation with MRI was performed (Figure 1). She gave a remote history of an ovarian malignancy almost 10 years previously. The spinal lesions were treated with palliative decompressive laminectomy and radiation therapy. She remained well for 21 months and then re-presented with confusion. A large, extra-axial mass was identified in the left frontoparietal region on contrast-enhanced CT (Figure 2). MRI was also performed pre and post administration of gadolinium (Figures 3 and 4). What MRI characteristics are common to both the spinal and brain lesions? What is their most likely aetiology?

Figure 1a shows heterogeneous T_2 signal within T4 and T7 vertebral masses, resulting in effacement of the thecal sac and compromise of the cord. Figure 1b demonstrates heterogeneous, multiloculated high T_2 signal within the first and second sacral segments. These appearances are consistent with multiple vertebral metastases, suggesting a malignant aetiology of the subsequent intracranial lesion. This left frontoparietal parafalcine lesion enhances on CT (Figure 2), and further characterisation with MRI demonstrates multiloculated foci of T_2 hyperintensity with heterogeneous gadolinium enhancement (Figure 3). The coronal T_2 weighted image (Figure 4) clearly shows the extra-axial (calvarial) aetiology of the mass, causing effacement of the underlying cortex and left lateral ventricle. The histology of both the spinal and calvarial lesions confirmed metastatic ovarian adult granulosa cell tumour (GCT). History confirmed her previous ovarian malignancy to be a GCT.

Ovarian GCT is an oestrogen-producing sex cord stromal cell tumour which accounts for less than 2% of ovarian tumours [1]. It is divided into adult and juvenile types on the basis of clinical and histopathological features. The clinical presentation of ovarian GCT is hyperoestrogenism. This manifests as menstrual irregularity in pre-menopausal women and vaginal spotting in post-menopausal patients. GCT is considered to have low malignant potential. It is, however, well known to have late recurrences, with metastatic spread most commonly involving the peritoneum and pelvis. Distant spread is rare: only a handful of cases has been reported with vertebral metastases causing cord compression, and two cases have been reported with intracranial deposits [2]. This case with progressive spinal and cranial metastases is therefore extremely rare.

The MRI appearance of ovarian GCT has been described by several authors. The tumour was first described as foci of high and low signal intensity on T_1 and T_2 in a multicystic adnexal mass with haemorrhage [3]. Subsequently, a small case series of primary tumours also demonstrated similar MR features, albeit with varying cystic or solid predominance [1]. Two common forms of GCT were categorised by Kim and Kim [4] as multiseptated cystic masses or as unlobulated solid masses with internal cystic portions. Haemorrhage was noted as a common and characteristic finding. Recurrent ovarian GCTs at distant sites, involving the intra-abdominal peritoneum, pelvis and retroperitoneum, have shown the same imaging features as those of the primary GCT and are often discrete round masses [5].

This case reaffirms that even distant metastatic disease in an unusual site displays the same distinctive radiological appearances as primary granulosa cell tumour on MRI: multiloculated foci of T_2 hyperintensity and heterogeneous gadolinium enhancement. It also supports the view of other authors that these distinctive imaging findings are diagnostic for recurrent disease in the setting of known previous GCT.

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Figure 1. (a) Sagittal T_1 and T_2 weighted images of thoracic spine and (b) sagittal T_1 and T_2 weighted images of sacral spine.

Figure 2. Coronal and sagittal contrast-enhanced CT brain.

Figure 3. Axial T_1 weighted post-contrast and T_2 weighted images of brain.

Figure 4. Coronal T_2 weighted image of the brain.

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