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Spindle cell oncocytoma of the adenohypophysis: 2 case reports of unusual radiological and intra-operative findings

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ABSTRACT

Background: Spindle cell oncocytoma (SCO) is a rare primary tumour of the pituitary gland, recently designated as a separate entity from pituitary adenomas. Although our knowledge of pathological features of this tumour is growing in the light of recent reports, its radiological and surgical features are relatively unknown.
Clinical presentation: We report two cases of SCO resected through a trans nasal trans sphenoidal approach. Both these cases showed isointensity and well circumcised shape on T2w MR images preoperatively. During resection both cases had a firm, solid consistency. Complete resection was not possible in order to avoid damage to the optic chiasm, and one case showed re-growth at follow-up and required further surgery.
Conclusion: SCO is a rare entity, difficult to identify on clinical basis alone, but with different radiological and surgical operative features compared to typical pituitary adenomas. This tumour should be suspected preoperatively if an isointense and well delineated pituitary mass is identified, or unusually during resection when a hard consistency is noted.

1. Introduction

Spindle cell oncocytoma (SCO) is an uncommon tumour of the pituitary gland, only recently established as a distinct entity from non-secreting adenomas [1–4]. To the best of our knowledge, only 26 cases have been reported so far in literature [5–17].

The histological features of these tumours are quite specific. They show a spindle cell morphology, comprising groups of non-epithelial and non-adenomatous cells, with abundant mitochondria into the cytoplasm (oncocytic cells) [3]. These cells label with antibodies to epithelial membrane antigen (EMA), thyroid transcription factor-1 (TTF1) [18,19], galectin-3, S-100 protein and vimentin, but do not react with antibodies to anterior pituitary hormones and the alpha glycoprotein subunit [8,10,20].

From a clinical and radiological perspective, they resemble typical non-secreting pituitary adenomas: slow growing masses with homogeneous enhancement on MRI scan [21,22]. However, their radiological features may vary and are actually still not clearly defined. It is quite hard to identify distinct features for a differential diagnosis. We report two cases of SCO diagnosed and treated in our hospital. Both patients presented with visual impairment and were treated with endoscopic trans nasal trans sphenoidal resection. The goal of this report is to help define the clinical and radiological presentation of SCO as well as the surgical technical nuances encountered both at primary resection and recurrence of this rare entity.

2. Case reports

2.1. Case 1

A 61-year-old gentleman was referred to the endocrinology service with symptoms and signs of hypopituitarism. He presented with fatigue, weight loss and visual impairment. His endocrine profile showed mild disconnection hyperprolactinemia, with a prolactin level of 496 mIU/l, a low testosterone level of 0.7 nmol/l, IGF-1 12.4 nmol/l (age related reference range 10–28 nmol/l), growth hormone level of 0.25 mcg/l, low levels of LH < 1 IU/l and FSH 1.5 IU/l.

Ophthalmological assessment showed no visual field deficits with some degree of visual acuity reduction on the left eye (6/9).

An intracranial mass was suspected, so the patient underwent radiological assessment. A MRI scan confirmed the lesion to be the same

Abbreviations: SCO, Spindle Cell Oncocytoma; EMA, Epithelial Membrane Antigen (EMA); GFAP, Glial Fibrillary Acid Protein; MRI, Magnetic Resonance Imaging; T1w, T1 weighted; T2w, T2 weighted; TTF1, Thyroid transcription factor-1; CT, Computer Tomography; WHO, World Health Organization.

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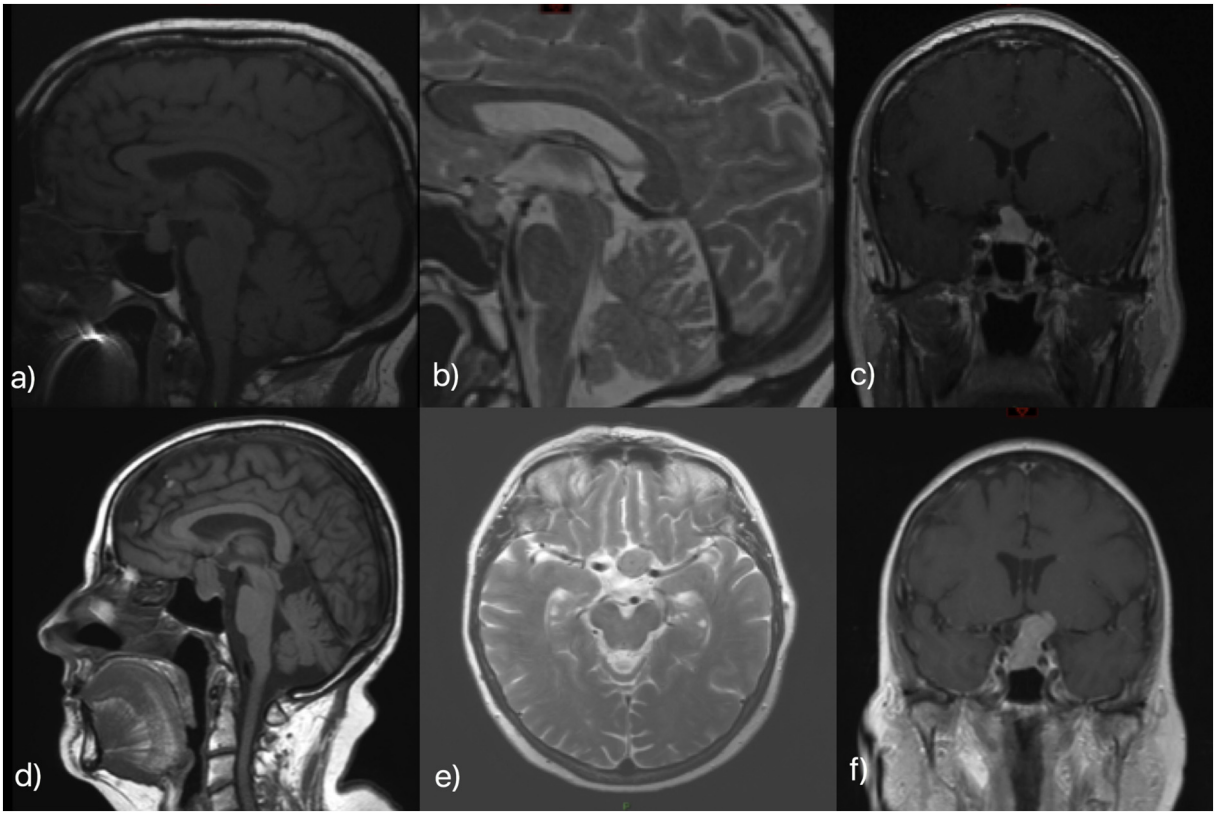

Fig. 1. a) Pre-operative T1w b) T2w sequence c) T1w with contrast for patient 1. d) Pre-operative images T1w e) T2w sequence f) T1w with contrast for patient 2.

intensity of the brain tissue on T1 and T2 weighted sequences, with homogeneous enhancement after Gadolinium (Gd) administration (Fig. 1a, b and c). Compression of the optic chiasm was also noted. The pituitary gland was displaced upward and slightly on the right (Fig. 1c). These features were interpreted as those of a large pituitary macroadenoma.

He underwent endocopic trans sphenoidal resection which was technically challenging as the tumour was found to be firm, fibrous and greyish with consistency and appearance very similar to that of a meningioma. However, it was difficult to distinguish the normal pituitary gland and to define the plane between the superior tumour margin and optic chiasm, so complete resection was not achievable.

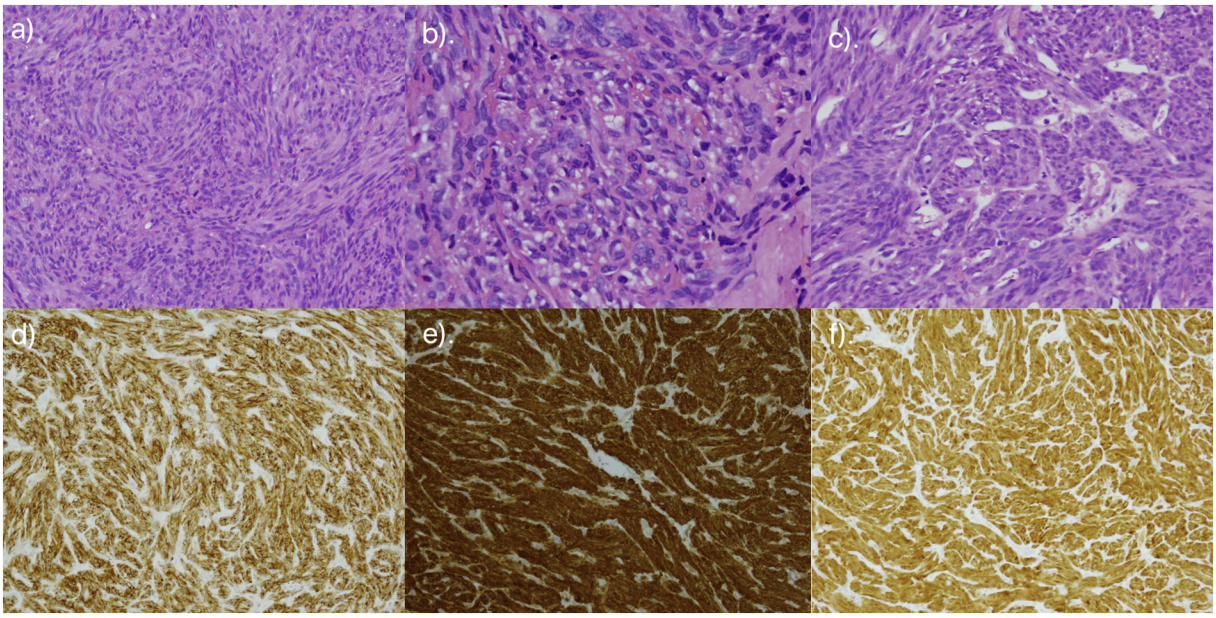

Fig. 2. a) Case 1 histology image using haematoxylin and eosin stain, shows interlacing fascicles of spindle cells with rather "cigar-shaped" nuclei at ×20 magnification. b) Case 2 histology image using haematoxylin and eosin stain, shows a clear cell appearance of the tumours at ×40 magnification. c) Case 2 histology image using haematoxylin and eosin stain, shows a nested pattern at ×20 magnification. d) Case 1 histology image shows immunocytochemistry staining of tumour for epithelial membrane antigen (EMA). e) Case 1 histology image shows immunocytochemistry staining of tumour for B-cell lymphoma protein (BCL2). f) Case 2 histology image shows immunocytochemistry staining of tumour for S-100 protein.