

### **Cytological, histological and ultrastructural findings of two variants of mixed pituitary adenoma-gangliocytoma**

*J.S. Sy and L.C. Ang*

London Health Sciences Centre, Ontario, Canada

Pituitary adenomas containing a ganglion cell component are rare. They are tumours of undetermined histogenesis, although three main theories have been proposed. The first suggests that heterotopic hypothalamic-type neurons within the pituitary produce hormones which stimulate adenomatous growth of the adenohypophysis. The second theory is that pituitary adenomas develop neuronal differentiation, while the last proposes that both the adenomatous and neuronal components arise from pituitary embryonal rests. Morphologically, mixed pituitary adenoma-gangliocytomas form a heterogeneous group. We report two cases that demonstrate both ends of the morphological spectrum. The first tumour contained only isolated ganglion cells, and otherwise resembled a classical growth hormone-producing pituitary adenoma. The second case, however, contained abundant neuropil with gangliocytic cells and intermediate cells admixed with rare adenomatous clusters expressing prolactin. In both cases, the diagnostic features were apparent on intra-operative smears. It is not yet known whether the prognosis of mixed pituitary adenoma-gangliocytomas differs from that of pituitary adenomas. However, it is important to recognize a gangliocytic component, since these tumours may not respond fully to hormone-targeted therapy. The cytological features aiding intra-operative diagnosis will be reviewed, together with the wide range of morphological and ultrastructural features of this unusual group of tumours.

#### LEARNING OBJECTIVES:

This presentation will enable the learner

1. To explore current theories on the pathogenesis of mixed pituitary adenoma-gangliocytomas.
2. To describe the spectrum of cytological, histological and ultrastructural findings in mixed pituitary adenoma-gangliocytomas.

#### CONFLICTS OF INTEREST:

See attached CANP Disclosure of Conflict of Interest form.