Introduction

Adeno-gangliocytomas are a rare form of pituitary tumour, with less than 40 cases being described in the literature worldwide. They are mixed lesions consisting of adenocytic and gangliocytic components.2,3 These tumours have in most cases been found in patients with features of acromegaly, although less frequently can present with cushingoid features or hyperprolactinemia.3 Uncomplicated pituitary adenomas and neural gangliocytomas tend to exhibit a high degree of cellular differentiation and low proliferative potential. As such they are often slow benign tumours that may be resolved with complete surgical resection.2 The clinical course of mixed Adeno-gangliocytomas are however not well characterised. The histogenesis of Adeno-gangliocytomas also remains unclear although the histological specimens show histogenetic distinction between the two components.2,4 Reports on these rare tumours can provide insight in to the effectiveness of current treatment modalities.

Case Details

A 64-year-old man presented with symptoms of urolithiasis and was admitted for stone fragmentation and ureteric stent insertion. During anaesthetic recovery he developed sudden onset severe frontal headache with nausea, photophobia and visual field disturbance. Urgent cranial CT scanning showed pituitary apoplexy. Subsequent pituitary MRI scan confirmed a pituitary macroadenoma with evidence of tumoral haemorrhage. [Figure 1] On examination he had classical clinical features of acromegaly including prognathism, interdental separation, large hands and macroGLOSSIA.

Figure 1: Pituitary macroadenoma measuring 14.1 mm with area of haemorrhage in the right side of the gland indicating apoplexy.

Figure 2: Immunostaining of adeno-gangliocytoma Histology sections. A. H and E staining of histological specimen. B. Adenocytes expressing HGH. C. Adenocytes expressing AE1/AE3 paranuclear dot like staining D. Naelle expression in gangliocytes. E. Synaptophysin expression in gangliocytes. F. Prolactin expression in gangliocytes.

Figure 3: Graph depicting serum IGF-1 levels against date collected. There is an over 50% drop in IGF-1 levels from 103.8 nmol/l to 46.9nmol/l post treatment with surgery and adjuvant radiotherapy and somatostatin analogue therapy.

Discussion

Ganglion cell containing tumours within the pituitary gland have been rarely described in the literature.1 Mixed adenoma and ganglion cell containing tumours, also described as collision sellar lesions, were found to account for 0.52% of lesions in a series of 1322 sellar tumours.3 Another study quoted a figure of 0.55%, highlighting the rarity of these tumours.3

The origins of these tumours remains controversial. Theories include the neuronal metaplasia of pituitary adenoma cells in to ganglionic cells with evidence that trans-differentiation may occur with adenoma cells being shown to express receptors for nerve growth factor as well as neuronal components including cytokeratin supporting this hypothesis.1,2,3 Another hypothesis stipulates that there is common stem cell progenitor for both adenoma and ganglionic cells could account for these mixed lesions.1,2,3 A third theory involves abnormal migration of neuronal tissue during embryogenesis accounting for these lesions.1,2,3 In our histological sample, the ganglion cell component demonstrated staining for hormonal markers including prolactin [Figure 2,F]. A previous report by Li et al. also demonstrated pituitary hormones within the neuronal element of the tumours including prolactin and ACTH.7 This lends support to the theory that at least some of the lesions described are the result of trans-differentiation of adenocytes into neuronal cells.

In this case, the fibrous nature of the tumour made resection very difficult and only 20% of the tumour could be safely resected. The treatment did result in an over 50% reduction in IGF-1 levels in conjunction with radiotherapy and somatostatin analogue therapy, demonstrating the effectiveness of the treatment modality in reducing the initial tumour mass. [Figure 3].

Conclusion

Conventional micro pituitary adenomas and neural gangliocytomas tend to respond well to surgery and may not need adjuvant therapy post surgery. The risk of recurrence in mixed Adeno-gangliocytomas is not well characterised. Although initial tumour reduction seems effective, further research is needed to determine the role of adjuvant medical therapies in this group of patients if complete surgical resection is achieved.

References:

1. Conventional mixed pituitary adenomas and neural gangliocytomas tend to respond well to surgery and may not need adjuvant therapy post surgery. The risk of recurrence in mixed Adeno-gangliocytomas is not well characterised. Although initial tumour reduction seems effective, further research is needed to determine the role of adjuvant medical therapies in this group of patients if complete surgical resection is achieved.