

## Recurrent pituitary macroadenoma with rapid growth

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**Abstract:** Macroadenomas are benign tumours but they may be locally invasive as described in this case report. Macroadenomas are usually slow-growing and clinically silent until they present with pressure symptoms [1]. The patient in this case report presented with a recurrent aggressive non-functioning pituitary macroadenoma with mitosis and hypopituitarism. The clinical and imaging features as well as management of the pituitary macroadenoma are discussed.

**Keywords:** Intracranial mass lesions, debulking.

### Case report

A 25 year old male patient presented in 2002 with apoplexy and acute vision loss. The magnetic resonance imaging (MRI) scans depicted a non-functioning pituitary macroadenoma measuring 24mm X 20mm X 18mm. He underwent a trans-sphenoid debulking. Post-operatively his vision improved and symptoms of lethargy, headaches and sleep apnoea dissipated. He was put on full pituitary replacement therapy and had radiotherapy. In 2003 the patient once again experienced blindness. On the follow-up MRI scans the lesion was even bigger than it initially was in 2002 and showed signs of compressing the optic chiasm resulting in impaired vision. The patient again underwent debulking. Histology revealed mitotic figures and aggressive features. His vision improved once again after the second surgical debulking.

In 2007 he again presented with his previous symptoms of lethargy, headaches and vision loss. The clinical findings were bilateral optic atrophy with right temporal field deficits. He was diagnosed with hypopituitarism and he was also overweight.

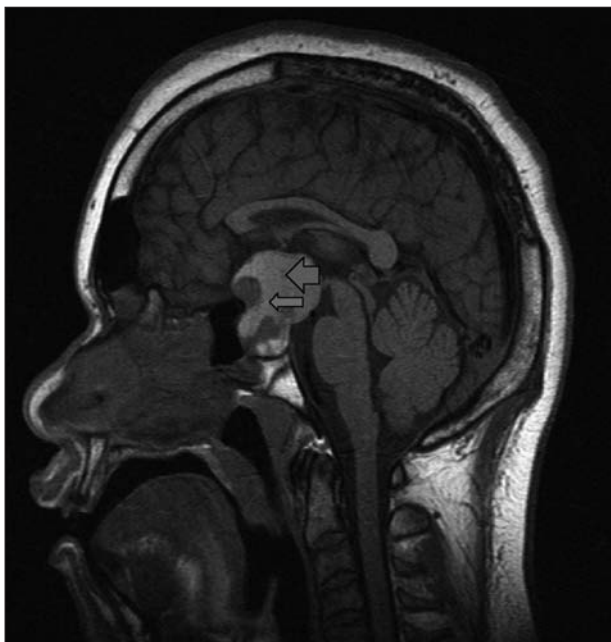
The MRI scans demonstrated a large sellar mass extending suprasellarly and into the cavernous sinus bilaterally. The suprasellar component extended past the posterior aspect of the optic chiasm. The macroadenoma measured 39.8mm x 36.2mm x 33.1mm. As previously the histology report showed aggressive and mitotic behaviour; the tumour

was progressing and compressing the optic chiasm resulting in vision loss thus the patient required surgery. The patient underwent endonasal trans-sphenoidal surgery. At the end of the surgical procedure no significant amount of the tumour was visualized and the arachnoid and capsule were well seen. Histological reports described the tumour as aggressive and severely mitotic. Medication and full pituitary replacement therapy was continued. The medication administered was hydrocortisone, eltroxin, tertroxin and sustanon. The patient was discharged and follow-up MRI scans and regular appointments at the pituitary clinic were scheduled.

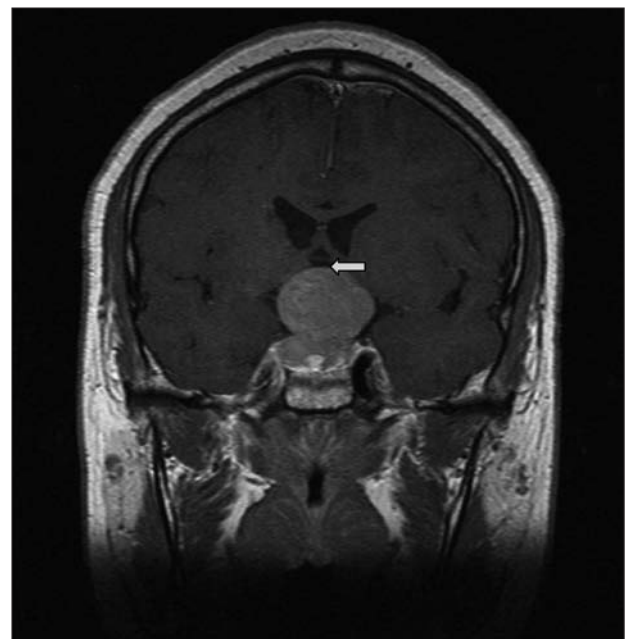
### Discussion

Pituitary macroadenomas are common intracranial mass lesions accounting for 10% of all primary intracranial tumours. Suprasellar extension is most common, followed by lateral extension into the cavernous sinus (Figure 1) [2]. Tumour necrosis, haemorrhage and cyst formation are all common complications in larger tumours which are presumably due to the tumour outgrowing the blood supply [1].

Pituitary macroadenomas are classified according to whether or not they produce hormones. Those that do are called functioning macroadenomas and those that do not are known as non-functioning macroadenomas [3]. Clinically 75% of macroadenomas are hormonally active. The most common secreting tumour is prolactinoma which occurs in 30% of patients, followed by growth hormone adenomas in 15% of



*Figure 1: MRI sagittal view depicting suprasellar extension of a large pituitary macroadenoma. Large arrow identifies the suprasellar extension of the tumour while the small arrow illustrates the pituitary macroadenoma.*



*Figure 2: MRI coronal view: arrow depicts compression of the optic chiasm by the pituitary macroadenoma.*

patients and adrenocorticotrophic hormone which produces tumours in 5-10% of patients [2]. In the other 25% of patients the tumours are non-functional, as in this case, symptoms vary according to the size, location and the hormones produced by the tumour. The most common symptoms are unexplained fatigue, headaches, dizziness, vomiting and weight loss or gain. Some of the more serious symptoms are vision loss, infertility and growth retardation [3]. Visual defects result from suprasellar extension of a pituitary tumour because it may compress the optic nerve, optic chiasm or optic tract (Figure 2) [4].

Treatment options include surgery, radiation and drug therapy. Usually it is a combination of all three. Trans-sphenoidal surgery is regarded as the first-line treatment as it normalises growth-hormone secretion in about 70% of patients with a microadenoma (< 1 cm), but in less than 50% of those with a macroadenoma (> 1 cm) because of the difficulty of safely removing all tumour tissue [2]. Pituitary surgery may result in partial or complete hypopituitarism. Medical therapy has an important role in the management of residual growth-hormone excess post pituitary surgery. Radiotherapy may also be used for this purpose but, takes many years to achieve a substantial reduction in growth-hormone secretion, and carries a significant risk of hypopituitarism [2].

On both computed tomography and MRI scans the tumours are either solid, or both solid and cystic as described in this case report. There may be contrast enhancement but there is usually no focal calcification. MRI is the preferred imaging modality as computed tomography is less sensitive. Superb resolution allows small lesions to be visualised and clearly defines the relationship of larger lesions to the optic chiasm and adjacent structures [5]. The use of MRI with gadolinium contrast is important for detection of (i) optic chiasm compression, and (ii) tumour invasion of the sellar floor.

In this case the pituitary macroadenoma showed the common symptoms of a non-functioning macroadenoma because the patient presented with unexplained fatigue, lethargy and visual defects. Normal

visual loss is gradual and is usually bitemporal field loss. The acute vision loss of the patient was clearly a result of the extensive suprasellar extension of the tumour which impinged on the optic chiasm. The recurrence of the macroadenoma was due to the fact that previous surgery was unsuccessful in removing the tumour completely. Regular follow-up MRI scans are important to monitor the situation and pick-up any chance of recurrence.

### Conclusion

Although this was a benign mass the symptoms of a pituitary macroadenoma are serious. This patient underwent surgery three times and had to endure acute vision loss. It is not always possible to remove the tumour completely due to its awkward location and as a result patients often have to undergo radiation treatment as well as drug therapy. Follow-up care after treatment is of the utmost importance as recurrence is a possibility. Check-ups help to monitor the situation and should not be missed so that any changes can be noted and treated. Early and heightened awareness is needed to detect the sometimes subtle signs and symptoms to avoid the more serious and threatening ones.

### References

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