

# Saccular Internal Carotid Artery Aneurysm Masquerading As Pituitary Macroadenoma

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## Background:

*Causes of sixth cranial nerve palsies include vascular disease, trauma, stroke, and space occupying lesions (SOL). When a SOL is observed in the context of a sixth cranial nerve palsy, the pituitary lesion differential list must be investigated with the appropriate cerebral imaging modality, to guarantee correct diagnosis of the pituitary lesion. We present the case of a patient with an aneurysm which masqueraded as a pituitary macroadenoma.*

## Case Report:

**Presenting Complaint:** An 84 year old woman presented with a three day history of diplopia on looking to the right, abnormal eye movements, right-sided peri-orbital headache, occipital pressure, vomiting, and diarrhoea.

**Past Medical History:** Hypertension, chronic kidney disease, cervical cancer in remission, and a benign sigmoid colon stricture.

**Examination Findings:** Right-sided sixth cranial nerve palsy was elicited. Normal pupillary light reaction, visual acuity, and visual fields. No other neurological deficits. The patient had no features of hypercortisolism, growth hormone excess, or adrenal insufficiency.

**Investigations:** Initial bloods revealed AKI on CKD. Hence non-contrast CT was performed and demonstrated a 39x18x14mm sella mass, involving the pituitary fossa, extending into the right cavernous sinus and to a lesser degree the left cavernous sinus, sphenoid sinus, and posterior sella turcica. Non-contrast magnetic resonance imaging (MRI) of the pituitary, revealed a heterogeneous signal in the pituitary fossa adjacent to the right internal carotid artery (ICA). Subsequent anterior pituitary function tests were all within normal range.

**Working Diagnosis:** A non-functioning pituitary macroadenoma. With planned transfer for neurosurgical intervention.

**Pivotal moment:** Prior to transfer the patient kidney function improved, facilitating pituitary imaging with contrast.

**Subsequent imaging:** Pituitary MRI with contrast revealed a homogeneously enhancing lesion of the pituitary fossa extending into the sella and suprasellar cistern.

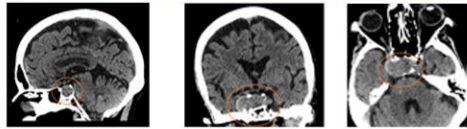
**Joint endocrine and radiology meeting:** It was felt that the low signal rim on MRI could be calcification or signal-void due to blood flow. As no calcification was seen on the previous CT scan, it was concluded that this was likely to be a saccular aneurysm arising from the right internal carotid artery, compressing and displacing the pituitary gland to the left. CT angiography confirmed a large right ICA aneurysm.

**Definitive management:** Upon re-discussion the neurosurgeons quoted a 32% operative mortality risk, with an annual risk of aneurysm rupture of 1%.<sup>1</sup> Management options were discussed with the patient, and conservative management of the diplopia with an eye patch was agreed.

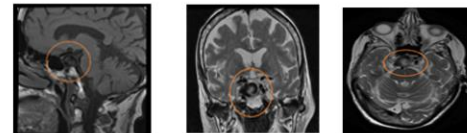
### References

1. Unruptured intracranial aneurysms-risk of rupture and risks of surgical intervention. N Engl J Med. 1998;339:1725-1731. DOI: 10.1056/NEJM199812103392401. [accessed 2 September 2015].
2. Ferrante E, Ferraroni M, Castrignano T, et al. Non-functioning pituitary adenoma database: a useful resource to improve the clinical management of pituitary tumors. Eur J Endocrinol.

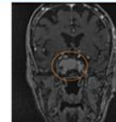
### Non Contrast CT Head



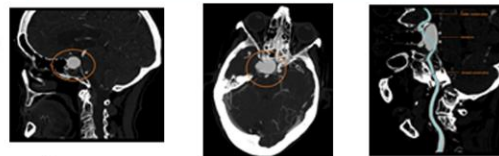
### Non Contrast MRI Head



### MRI Pituitary With Contrast



### CT Angiography Head



## Discussion:

- Causes of sixth cranial nerve palsies include vascular disease, trauma, stroke, and space occupying lesions (SOL).
- When a SOL is observed, the differential diagnosis includes a pituitary macroadenoma, pituitary metastasis, or other, more unusual pituitary tumour, as well as vascular malformations.
- Giant intracranial aneurysms must be considered when a non-enhanced CT study shows a well circumscribed mass without oedema.
- Cerebral angiography is then key to its diagnosis.<sup>2</sup>
- This case highlights the importance of performing a contrast pituitary MRI to reliably establish the diagnosis of a pituitary lesion.