

# Resolution of severely impaired cognitive function following medical treatment of cystic invasive macroprolactinoma



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## BACKGROUND

Pituitary adenomas constitute approximately 10% of all intracranial tumors (1-4). Grossly, they are classified as microadenomas if their diameter is less than 10 mm or as macroadenomas if it is greater than 1 cm (4).

Giant prolactinomas are uncommon tumours and typically exceed 40mm (1). These tumours can be locally invasive but are still very sensitive to dopamine agonist therapy. The medical management of cystic giant prolactinomas using dopamine agonist drugs is controversial as non-solid components of these aggressive tumours are believed to respond poorly to drug therapy (5).

Giant prolactinomas can present with Visual field defect, intra cranial pressure symptoms and even temporal lobe epilepsy (1-4).

Impairment of higher cognitive functions has been noted postoperatively after trans cranial surgery and as a long term consequence of radiotherapy treatments (6).

Reversible cognitive, neuropsychological and neuropsychiatric disturbances have been previously reported in patients with surgically decompressed arachnoid cysts but not after medical treatment of giant prolactinoma.

We present a case of successful restoration of severely impaired cognitive function achieved safely after significant adenoma shrinkage with medical treatment alone.

## CASE

A 22-year old maths university student presented with a few weeks history of mild headaches. He additionally reported a year's long history of gradual and progressive short memory deterioration evidenced by poor performance at recent exams. In attempt to compensate for rapidly progressing memory problems the patient started using smartphone messages and other memory cues. Subsequently he was receiving messages to remind him of messages which he could not recall and realised that he had a serious problem. This unusual and unexplained rapid decline in mentation prompted urgent MRI brain which showed a large 48 x 52 x 28mm midline hypervascular cystic sellar mass causing significant brain oedema and extending into suprasellar region with cavernous sinus invasion and chiasmal compression. Retrospectively, he also complained of erectile dysfunction decrease shaving frequency but no galactorrhoea. He was clinically hypogonadal with significant gynaecomastia, sparse facial, chest and abdominal hair, and Tanner stage 4 pubic hair. His testes were soft and ~20mls in volume. Humphrey's visual field assessment showed a subtle left superior quadrantanopia, extraocular eye movements were intact. Humphrey's perimetry confirmed subtle left superior quadrantanopia. Visual acuity was normal. Urgent anterior pituitary function revealed marked hyperprolactinaemia 515,217 mIU/L (0-450), central hypogonadism, normal thyroid, adrenal and somatotroph axes. Diagnosis of giant invasive cystic prolactinoma was therefore made. He was commenced on cabergoline 250mcg daily. Prolactin levels reduced to 119,583 after the first two doses, and to 56,061 mIU/L on day 4. A 3-months follow-up MRI showed significant tumour size reduction. Detailed psychometric reassessment showed complete resolution of cognitive dysfunction. The patient has since successfully resumed Master in Mathematics course.



Fig. 1 MRI Pituitary at presentation

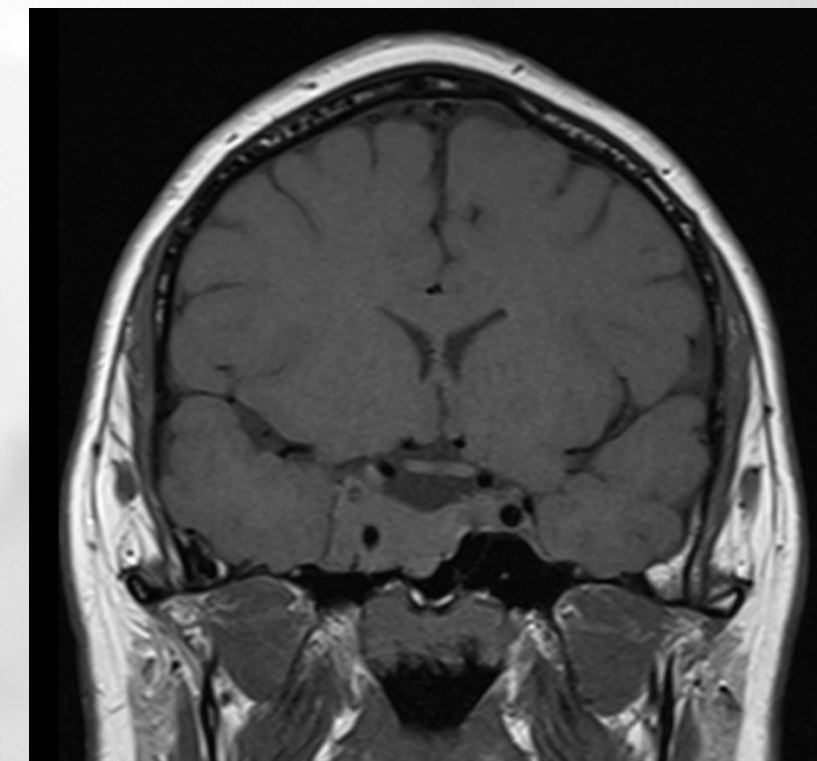


Fig. 2 MRI Pituitary following 6 months of cabergoline treatment

BIRT Memory and Information Processing Test Battery				
Scale	At presentation		After 6 months of treatment	
	T Score	Percentile	T Score	Percentile
Figure immediate	43	25	66	94
Figure delayed	35	7	61	87
Design Learning	42	20	60	85
Story immediate	33	4	57	76
Story delayed	32	4	59	82
List learning	39	14	71	98

## DISCUSSION

Reversible dyscognition with severe short term memory loss and personality disorders were reported in patients with surgically decompressed extracerebral cysts. Cystic giant prolactinomas can masquerade other intracranial malignancies but surgical intervention should be avoided. Dopamine agonists remains first line treatment obviating risks of pituitary surgery. This case highlights effectiveness of medical management in giant prolactinoma and is the first to report dramatic resolution of debilitating cognitive impairment.

## REFERENCES

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