

Treatment of a Giant Prolactinoma with Bromocriptine Leads to Marked Improvement in Visual Field Defect

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A 48-year-old male had blurred vision, narrowed visual field and headache over 6 months. He lost consciousness for which he was brought to the emergency department. Pertinent in the neurologic examination was bitemporal hemianopsia. The rest of the physical and neurological examination was normal. A pituitary mass causing optic chiasmal compression was then suspected.

Serum prolactin was elevated at >100,000 mIU/L (>4,700 ng/mL). Cranial MRI (Figure 1) showed a lobulated T1-isointense and T2-heterogenous pituitary mass, measuring 4.2 x 5.2 x 4.7 cm. There was compression of the third ventricle and foramen of Monro, obliteration of the optic nerves and chiasm, widened cavernous sinuses, and encasement of both internal carotid and left anterior cerebral arteries. A diagnosis of giant prolactin-secreting

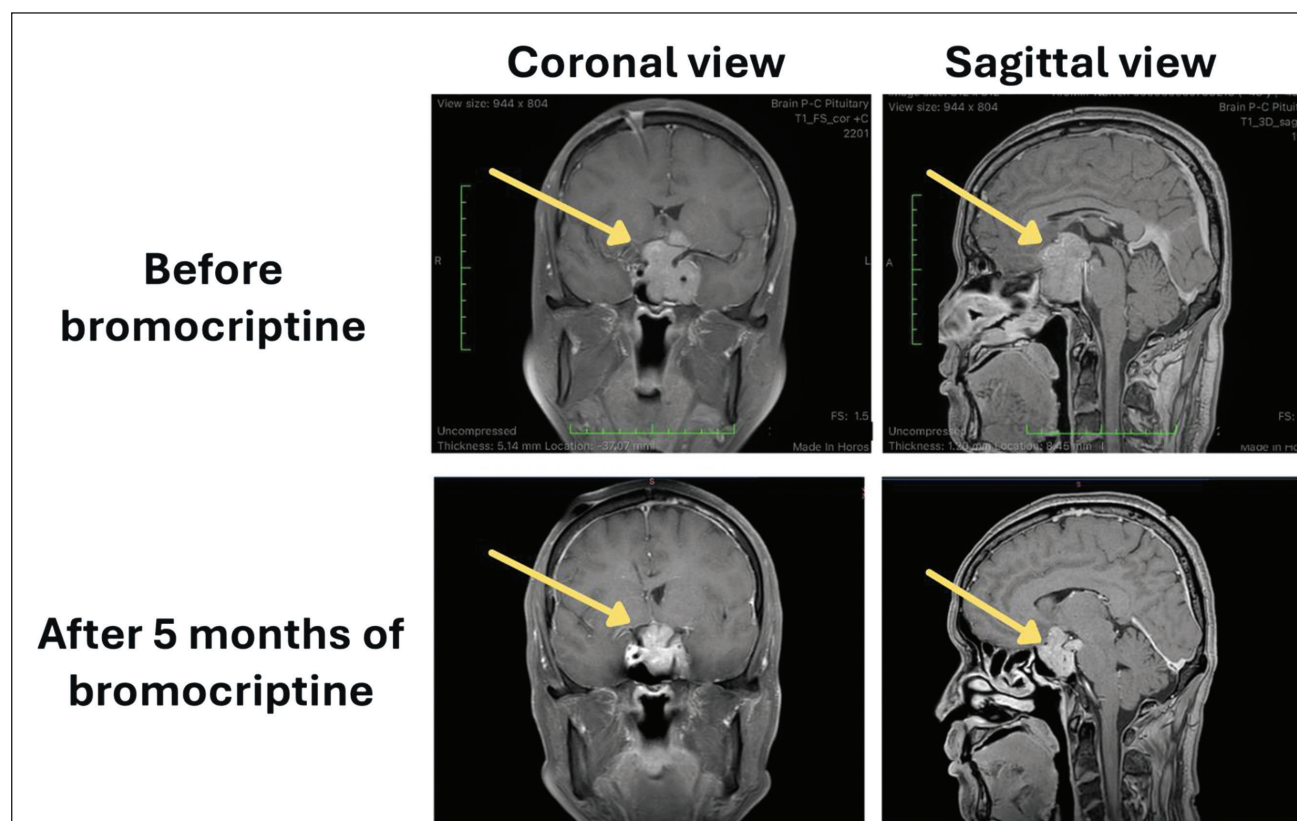


Figure 1. MRI showing the giant pituitary adenoma (arrows) before and 5 months after starting bromocriptine treatment.

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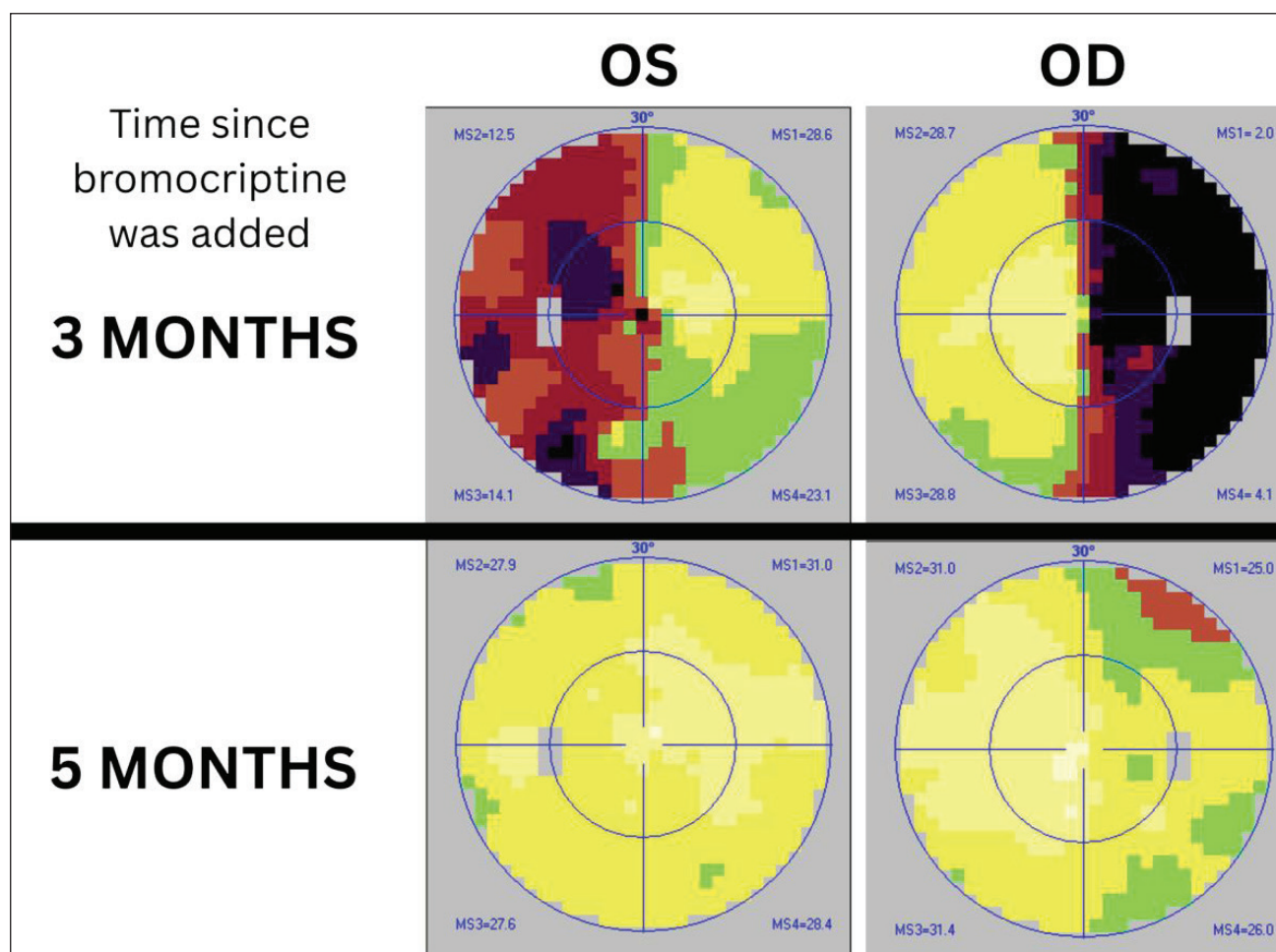


Figure 2. Visual field testing done 3 months after initiating bromocriptine showed moderate to severe depression of vision (*red and black*) in the entire temporal hemifield on the left eye (OS), and widespread severe depression of vision (*black*) of the entire temporal hemifield on the right eye (OD), respecting the vertical meridian (bitemporal hemianopsia). After 5 months, the left eye (OS) now shows very good field sensitivity (*yellow*) throughout. The right eye (OD) shows mild to moderate depression of vision (*green and red*) limited to the supero-temporal field.

pituitary macroadenoma was made. Due to obstructive hydrocephalus, he underwent emergency ventriculoperitoneal shunt. Surgical removal of the tumor due to visual compromise was contemplated. However, since the pituitary mass was Knosp grade 4, surgical excision was expected to be incomplete. A multidisciplinary discussion involving the neurosurgeon, endocrinologist and the patient himself and his family was done. The goals of therapy were 1) improvement in visual field (clinical); 2) normalization of serum prolactin (biochemical); and 3) reduction in size or complete resolution of the pituitary adenoma (radiologic / anatomic). It was emphasized to the patient that if there is no improvement in visual field with dopamine agonist (DA), surgery would eventually be resorted to. Treatment with DA was started based on prevailing recommendations.¹

Cabergoline is not readily available and still has to be imported from overseas. Bromocriptine 2.5 mg/day was started since it is the locally available DA. Within 1 month, serum prolactin decreased to 10,746 mIU/L. Bromocriptine was increased to 3.75 mg/day and maintained at this

level. Serum prolactin (mIU/L) further decreased to 3,031 to 2,465 then 1,722 at 2, 3 and 4 months (98% reduction), respectively. He tolerated bromocriptine and did not experience any adverse effects.

Visual field testing was done 3 months after initiating bromocriptine (Figure 2). It showed moderate to severe depression of vision (*red and black*) in the entire temporal hemifield on the left, and widespread severe depression of vision (*black*) of the entire temporal hemifield on the right, respecting the vertical meridian. This was interpreted as bitemporal hemianopsia, incongruous, from optic chiasm compression.

The characteristic visual field defect in large pituitary tumors is bitemporal hemianopsia. When large pituitary tumors extend superiorly, they compress on the optic chiasm - the site of decussation where the nerve fibers from the nasal portion of both retinas cross to the contralateral optic tract. The nerve fibers from the temporal portion of both retinas do not cross and continue on in the ipsilateral optic tract. The nasal portion of the retina allows us to see

the temporal field of vision. When these nerve fibers are compressed, the temporal field of vision on both sides are affected while the nasal visual fields remain clear.

Repeat cranial MRI at 5 months showed reduction in the size of adenoma to 3.2 x 3.2 x 3.4 cm. A follow-up perimetry done at this time showed very good field sensitivity (yellow) throughout the left eye while the right eye showed mild to moderate depression of vision (green and red) limited to the supero-temporal field.

LEARNING POINTS

Pharmacologic management with DA bromocriptine can be effective as first-line treatment in improving visual field defects even in a giant prolactinoma. Visual field defects should not compel doctors to immediately choose surgery over pharmacologic treatment for patients with prolactinomas.

Reduction in serum prolactin levels parallels the reduction in the size of the prolactinoma and improvement in visual field. Patients can be reassured that their vision may be restored medically without the need to undergo surgery if their giant pituitary adenoma is prolactin-secreting.

PATIENT'S PERSPECTIVE

For many years, I worked in a hospital where I was always the one caring for patients. I never imagined that one day, I would become a patient myself. Before I got diagnosed with giant prolactinoma, I often went to work deprived of sleep and food because of my lack of appetite. I also started forgetting things even right after doing them. I ignored these changes, thinking I was just tired, until I learned the real cause—a large tumor behind my eyes that was affecting my brain and vision.

First, I had my first surgery to remove fluid from my brain. I was later told I might need another major surgery to remove the tumor completely. But when I was referred to other physicians, they gave me hope. They explained that my case is still treatable through medications with strict monitoring, and if the treatment continues to work, I will no longer need another surgery.

With regular check-ups and close monitoring, the treatment has been successful. My hormone levels dropped by 98%, the tumor size has significantly decreased, and even my vision has started to improve! After 5 months of treatment, I was already fit to return to work.

As of this moment, I am still undergoing medication with constant guidance and help of my doctors. I remain hopeful that in time, I will be fully healed. This experience has taught me the true value of health, rest and self-care. I used to push myself too hard at work, but now I know our body has limits. Most of all, I learned to be truly grateful for the doctors who guided me, for my family and friends who supported me, and for God who gave me another chance at life. From the bottom of my heart, I am thankful for this second chance and for everyone who stood by me through this journey.

Ethical Consideration

The patient's consent was obtained before submission of the manuscript.

Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Data Availability Statement

No datasets were generated or analyzed for this study.

CRedit Author Statement

MASS: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft presentation, Visualization, Supervision; **JSP:** Formal analysis, Investigation, Writing – review and editing; **SAL:** Formal analysis, Investigation, Writing – review and editing.

Author Disclosure

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