Baltic Journal of CLINICAL MEDICINE and RESEARCH • 2024/01 • 038-040
https://doi.org/10.25143/rsu-bjcmr.2024.01.038-040

Multidisciplianry Treatment of Giant Prolactinoma in Young Adult

Jorė Rinkevičiūtė [1], Danielius Šetikas [1], Karolis Bareikis[2], MD, PhD, Dr. Sci. (Habil.) Arimantas Tamašauskas[2]

Affiliation: [1] Lithuanian University of Health Sciences, Lithuania,
[2] Department of Neurosurgery, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Lithuania

E-mail: jore.rinkeviciute@stud.lsmu.lt

Keywords: giant prolactinoma, hyperprolactinemia, neurosurgery.

Introduction

Prolactinomas are characterized by their hormonal activity and size. Tumors above 4 cm are considered giant (they form less than 1% of all pituitary tumors), which are challenging to manage, because of extreme hyperprolactinemia and tumor tissue compressing optic chiasm and invading cavernous sinus [1].

Case description

An 18-year-old male patient sought help from an ophthalmologist after two months of severe vision loss (VOS=0.01, VOD=0.1). In November 2021 performed exams, such as MRI (fig. 1) and blood tests, showed further results: left optic nerve compression due to giant intrasellar lesion (61.5 cm^3) with blood prolactin 358071 mU/l (norm – 89-365 mU/l), leading to diagnosis of giant prolactinoma.

Total tumor resection was technically impossible, so a combination of surgical and pharmacological therapy was chosen. First, the patient was treated with Cabergoline (2x/week) which decreased prolactin concentration to 107175.00 mU/l in two weeks, tumor shrank from 5.1x4.9x4.7 cm (61.5cm^3) to 4.5x4.3x3.6 cm (36.5 cm^3) and the patient regained his vision totally. Three weeks after diagnosis, routine microscopic transsphenoidal adenoma resection was performed to decompress optic chiasm and reduce hormone secreting mass. Surgeons removed tumor mass of 1.6 cm^3. Histological findings confirmed the diagnosis of prolactinoma. Surgery led to a decreased prolactin concentration of 45977.97 mU/l. Due to still high levels of prolactin, Cabergoline treatment was continued, the dose increased from 0.25 micrograms to 0.25 milligrams two times a week. A year after, prolactin concentration gradually decreases, vision is normal and follow-up MRI (fig. 2) shows only 3.3x2.1x1.8 (6.5 cm^3) of tissue remnants. The patient continues the use of Cabergoline, now 1 milligram two times a week.

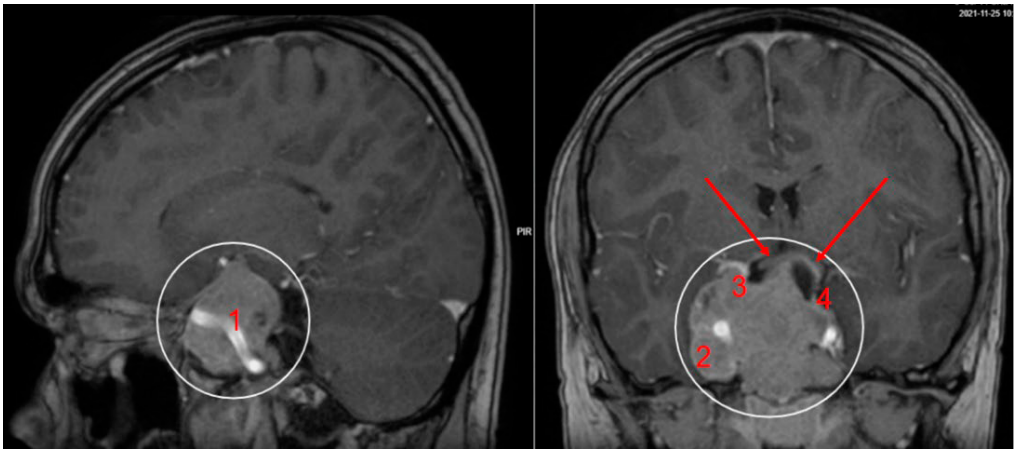

Figure 1. MRI T1 images from the day of diagnosis. 1– the carotid artery in the cavernous segment, surrounded by all sides by the tumor; 2 – the cavernous sinus filled with the tumor; 3 – the uplifted right optic nerve; 4 – compressed left optic nerve.

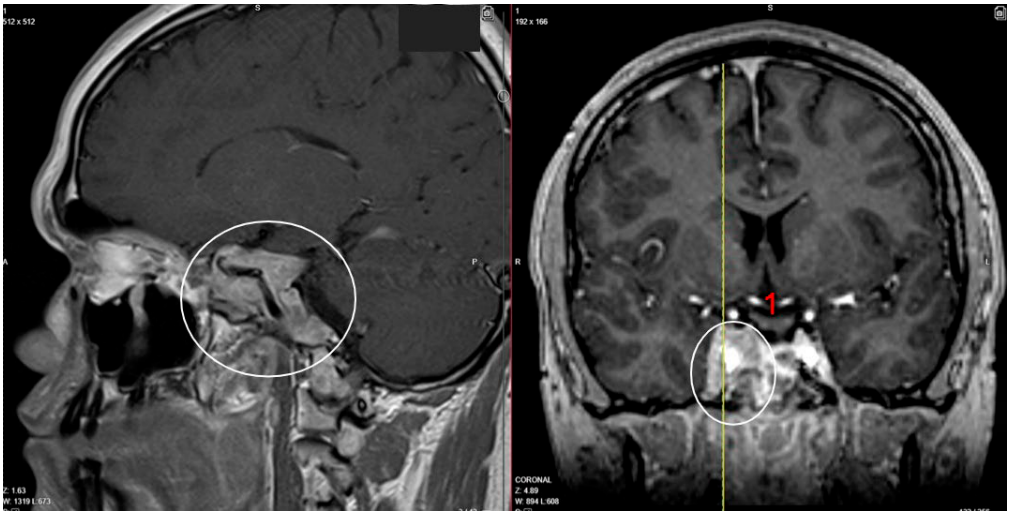

Figure 2. MRI T1 images from 10 months after the start of the treatment. 1 – the optic chiasm intact from the tumor.

Summary

An 18-year-old male patient with giant prolactinoma showed a significant positive response to combined pharmacological and surgical therapy (decreased tumor size, prolactin secretion and optic nerve compression) in brief period (Table 1).

Table 1. Decrease of tumor size (cm), (%)* and prolactin concentration (mU/l), (%)* in blood.

	2021-11-25	**2021-12-15**	**2021-12-19 (post surgery)**	**2022-09-25**
Tumor size	5.1x4.9x4.7 (61.5 cm^3)	4.5x4.3x3.6 (36.5 cm^3) (40.7%)*	5x3.8x3.6 (35.8 cm^3) (41.8%)*	3.3x2.1x1.8 (6.5 cm^3) (89.4%)*
Prolactin (norm 89-365 mU/l)	358071 mU/l	107175 mU/l (70%) *	45977.97 mU/l (87.2%)*	2188 mU/l (99.4%)*

Conclusions

Giant prolactinomas are known for their immense hormonal activity, which cannot be controlled with either only surgery or pharmacological treatment [2]. Despite general practice of conservative surgical prolactinoma treatment [3], this case displays the importance of combined surgical and pharmacological therapy.

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