



## Case Report

# Giant Prolactinoma Mimicking Unilateral Nasal Polyp-Case Report

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### Abstract

Giant prolactinomas comprise only 1~5 % of all pituitary prolactinomas. Giant prolactinomas with sinonasal invasion are even rarer with only few case reports around the world. Management of the giant prolactinomas are primary medical treatment and surgery as second line treatment. Here we present a 44-year-old man with initial presentation of unilateral nasal polyp and finally diagnosed as giant prolactinoma. Unilateral nasal polyp or polyp-like tumors with unilateral nasal symptoms are commonly encountered in ENT practice. In this case, care should be taken to include intracranial tumors such as pituitary tumors into the differential diagnosis of unilateral nasal tumor or polyp, in order to arrange adequate image modalities, perform tumor biopsy safely, make correct diagnosis and avoid unnecessary surgery.

### Introduction

Prolactinoma is the most common secreting adenoma of the pituitary gland. Prolactinomas of size smaller than 10mm are term microprolactinomas and size larger than 10 mm are termed macroprolactinomas [1]. Among macroparolactinomas, tumor size larger than 40 mm are termed giant prolactinomas, which comprise only 1-5% of all prolactinomas and have a male predominance [2]. Most giant prolactinomas are invasive with possible suprasellar, parasellar extension, or even downward extension into sphenoid sinus and clivus. However, giant prolactinomas with extensive nasal cavity occupation mimicking nasal polyp are rare, with only few case reports published [3,4]. Unilateral polyp or polyp-like mass are frequently encountered in outpatient clinic. Image study is suggested before any attempted biopsy of unilateral nasal mass, due to variety of tumors originated from intracranial or skull base may extend to nasal cavity or sinus. Common intracranial tumors secondarily involve the cranial base and extend into the sinuses or nasal cavity include meningioma or pituitary tumor. Extracranial tumors with nasal cavity and skull base invasion include inverted

papilloma, nasopharyngeal carcinoma, olfactory neuroblastoma, angiofibroma or other sinonasal neoplasms [5]. Here, we represent a case of giant prolactinoma with extensive intracranial and extracranial sphenoid sinus and nasal cavity involvement, along with literature review of clinical features, diagnostic modalities, management, and prognosis of these tumors.

**Keywords:** Giant prolactinoma; Nasal polyp; Nasal tumor

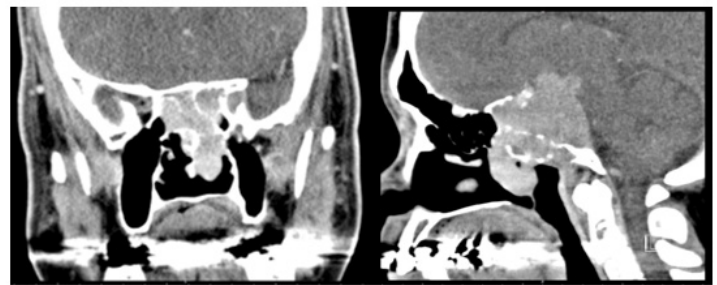
### Case Presentation

A 44-year-old man visited our otolaryngology outpatient clinic with chief complains of left side epistaxis, nasal obstruction and left side aural fullness. The patient had past history of bilateral gynecomastia status post bilateral simple mastectomy 15 years ago, dyslipidemia, hypertension and coronary artery disease and fatty liver disease. Anterior rhinoscopic exam showed polyp-like mass over left nasal cavity. Otoscope exam showed left otitis media with effusion. Pure tone audiometry showed left conductive hearing loss without sensorineural component.

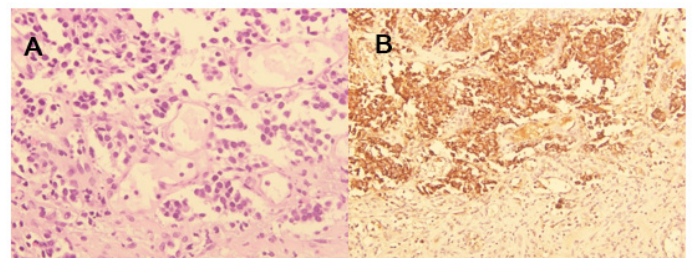
Physical exam showed no facial weakness and no neck mass was palpated. No blurred vision, gaze abnormality, and only mild headache was noted. Fiberoptic exam showed one reddish polyp-like mass over left nasal cavity with possible origin over left sphenoid recess (Figure 1). Nasopharynx was smooth without visible tumor. Also, there were no signs of cerebrospinal fluid leakage was noted. Under the impression of left sinonasal tumor, sinus CT with contrast was arranged. CT image showed a nearly 6.3x6.1x6.0 cm, multilobulated and avidly enhanced soft tissue mass in the sphenoid sinuses, with destruction and erosion of the corresponding sinus wall, left petrous apex and skull base, with inferior extension to left posterior meatus, and superior extension to sellar and left suprasellar regions, prepontine, left ambient and CP angle cisterns, bilateral cavernous sinus and left Meckel's cave, causing compression to optic chiasm and left optic tract (Figure 2). Under the suspicion of left side sinonasal tumor, left nasal cavity mass biopsy was performed with caution under endoscopy. Final pathology showed a high vascular benign neoplastic lesion with marked fibrin debris. The neoplastic cells showed solid nest pattern and composed of round or oval nuclei and abundant eosinophilic to clear cytoplasm and separated by congested vessels. No cell atypia, necrosis or mitosis is found. The immunochemical stain showed positive for synaptophysin, CK, CAM5.2, NSE and prolactin, focal positive for chromogranin and EMA, and negative for CD99, CD45, GFAP, CK7, CK20, CD56, S-100, SF-1, and h-GH. The mitotic index of Ki67 showed less than 1 % (Figure 3). According to the patient past history with bilateral gynecomastia and the image study, a benign lesion of prolactin secretion is considered and highly suggestive of pituitary origin. Under the diagnosis of giant prolactinoma with intracranial and extracranial sinonasal extension, the patient was referred to neurosurgery department for further evaluation. Ophthalmologist was consulted. Fundus optic coherence tomography showed bilateral nasal macular ganglion cell defect. Initial serum prolactin level was markedly elevated with value 4700 ng/ml (male normal range 4-15), decreased testosterone level with value 0.27 ng/mL (male normal range 2.5-8), normal ACTH and cortisol level and normal HGH and insulin-like growth factor level. Because the patient had no severe visual change, dopamine agonist was given first. The patient received Cabergoline with initial dose 0.5mg twice a week in the first week. After 1 week medical treatment with cabergoline, serum prolactin level markedly dropped to 467 ng/mL. We gradually increased the cabergoline dose to 1mg twice a week during the following 3 months. After 3 months, follow-up serum prolactin level decreased to 115 ng/ml, however the testosterone level was still low with value 0.73 ng/mL. Follow-up MRI image 3 months later showed only mild tumor size shrinkage (Figure 4). Follow-up fiberoptic exam also showed mild decreased left nasal tumor size without signs of CSF leakage (Figure 5).



**Figure 1:** Left nasal cavity polyp-like tumor.



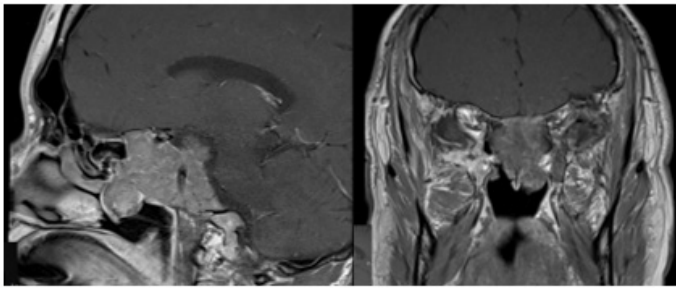
**Figure 2:** Sinus CT showed a suspected left side sinonasal mass with intracranial and skull base extension. However, it turned out to be a giant prolactinoma with sinonasal invasion.



**Figure 3:** (A) H&E stain 400X showed neoplastic cells with solid nest pattern and composed of round or oval nuclei and abundant eosinophilic to clear cytoplasm separated by congested vessels. (B) Positive for prolactin by immunohistochemical stain.



**Figure 4:** Mild decreased left nasal tumor size after 3 months of dopamine receptor agonist medical treatment.



**Figure 5:** Sella MRI showed only mild shrinkage of giant prolactinoma after 3 months of dopamine receptor agonist medical treatment.

## Discussion

Giant prolactinomas (>4 cm) comprise only 1 to 5% of all pituitary prolactinomas. Tumor size larger than 6cm with extracranial extension are even rarer. This case came to ENT clinic with initial presentation of unilateral nasal blockage and epistaxis, along with endoscopic exam and CT image findings, suggested sinonasal tumor or nasopharyngeal carcinoma, instead of pituitary gland tumor. Biopsy of only small piece of intranasal tumor part after the image study was performed after rule out anterior cranial brain tissue. Due to increasing interdisciplinary cooperation between ENT and neurosurgery department, ENT doctors gain more knowledge of cranial base anatomy and endoscopic endonasal approach toward cranial base tumors. Therefore, ENT doctors might encounter more cases of intracranial tumors and skull base tumors with sinonasal extension and should have greater alertness when dealing with unilateral nasal tumors. Based on literature review, the main clinical symptoms of giant prolactinoma include hypogonadism, visual disturbance, headache and rarely galactorrhea in men. The symptoms in men are less prominent and typically missed for long time. In this case, the patient suffered from gynecomastia and received mastectomy 15 years ago. However, the patient did not diagnosed of prolactinoma and might be underdiagnosed

by the general surgeon before because the patient had no other common symptoms as described above. Not until the symptoms of unilateral nasal blockage, epistaxis and aural fullness occurred, the diagnosis of prolactinoma was confirmed. The main treatment of giant prolactinomas is medical treatment with dopamine receptor agonist, most commonly Cabergoline. In general, medically treated prolactinomas have a high remission rate of 90% (normalization of serum prolactin level) [6]. Visual disturbances were significantly more common in giant prolactinomas. Among giant prolactinomas (>4 cm), the remission rate slightly dropped to 60% and visual improvement can be achieved in 70% [7]. Rapid Cabergoline dose increase might lead to rapid tumor shrinkage with risks of apoplexy or CSF leakage [8]. Lifelong dopamine agonist treatment is required in almost all patients to maintain prolactin suppression and prevent tumor regrowth. Surgery might be considered if medical treatment fails to achieve hormonal or tumor size control, medical resistance of dopamine receptor agonist or severe visual disturbance. Larger prolactinomas, such as giant prolactinomas, have higher rate of possible need for surgery in up to 50% patients [9]. Radiotherapy might be considered as adjuvant therapy in dopamine receptor agonist-resistant giant prolactinomas, either as primary radiotherapy or received after tumor debulking surgery.

## Conclusion

Management of giant prolactinomas extended to sinonasal area should involve multidisciplinary approach. As a ENT doctor, when facing a patient with unilateral nasal cavity mass, suspicious and aware of the possibility of intracranial tumor with sinonasal invasion, such as pituitary gland tumor, should be put in the differential diagnosis list. Adequate imaging studies should be performed before unilateral nasal tumor biopsy and increase the diagnostic accuracy.

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