

Low Differential Thyroid Cancer Metastasizing to the Sphenoid Sinus and Orbital Apex: A Case Report

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Abstract

Sinonasal tumors are generally primary. Metastasis to the paranasal sinuses is less common. In this article, a 70-year-old female case who applied to the emergency department with the complaint of sudden onset of decreased vision is presented. In this case, the diagnosis and treatment process of the patient who had a mass in the sphenoid sinus close to the orbital apex, whose pathology result was reported as poorly differentiated thyroid carcinoma metastasis, was discussed.

Keywords: Sphenoid sinus, blindness, thyroid

INTRODUCTION

Malignant thyroid tumors are the most common endocrine malignancies, accounting for 90% of all endocrine cancers.¹ The normal thyroid gland is histologically composed of 2 main parenchymal cell types, follicular and para-follicular cells.² Malignant tumors originating from thyroid follicular cells are classified as well-differentiated thyroid carcinoma consisting of papillary and follicular carcinoma or undifferentiated/anaplastic thyroid carcinoma.³

In terms of morphology and clinical behavior, poorly differentiated thyroid carcinoma is found in the middle of differentiated thyroid cancers and anaplastic thyroid cancers, according to the tumor progression model. Poorly differentiated thyroid carcinoma may occur de novo or as a result of the progression of differentiated thyroid cancer.⁴

This case report presents a patient with poorly differentiated thyroid cancer with unusual metastases to the sphenoid sinus and orbital apex.

CASE PRESENTATION

Case Report

A 70-year-old female patient applied to the emergency department with the complaint of a sudden onset of decreased vision in the left eye. The complaint started 3 days ago. There was no history of trauma. In her anamnesis, we learned that her 9th rib was removed due to costal mass 5 months ago, and the pathology result was compatible with poorly differentiated thyroid carcinoma metastasis. After that, a total thyroidectomy was performed on the patient and radioactive iodine treatment was planned. She had a previous history of surgery for a lumbar hernia 10 years ago.

On physical examination, her neurological examination was normal. The periorbital region, conjunctiva, and sclera had a normal appearance. She did not have exophthalmos. Her eye movements were normal in all directions. Direct and indirect light reflexes were present. But there was a relative afferent pupillary defect on the left side. In the orbital MRI (Figure 1A and B), a well-circumscribed mass of 20 × 18 × 20 mm, as far as it can be measured, was detected in the region close to the apex of the left orbit, surrounding the optic foramen and extending into the sphenoid sinus. In addition, it was stated by the radiologists that the mass encircled the optic nerve and slightly compressed the optic chiasm inferiorly. Other causes such as cerebrovascular accident and temporal arteritis that may cause vision loss were excluded in the patient who was also evaluated by neurologists with brain MRI.

After proper anesthesia preparation, we performed a biopsy from the mass located in the sphenoid sinus by endoscopic endonasal approach. Pathology result was reported as poorly differentiated thyroid carcinoma metastasis.

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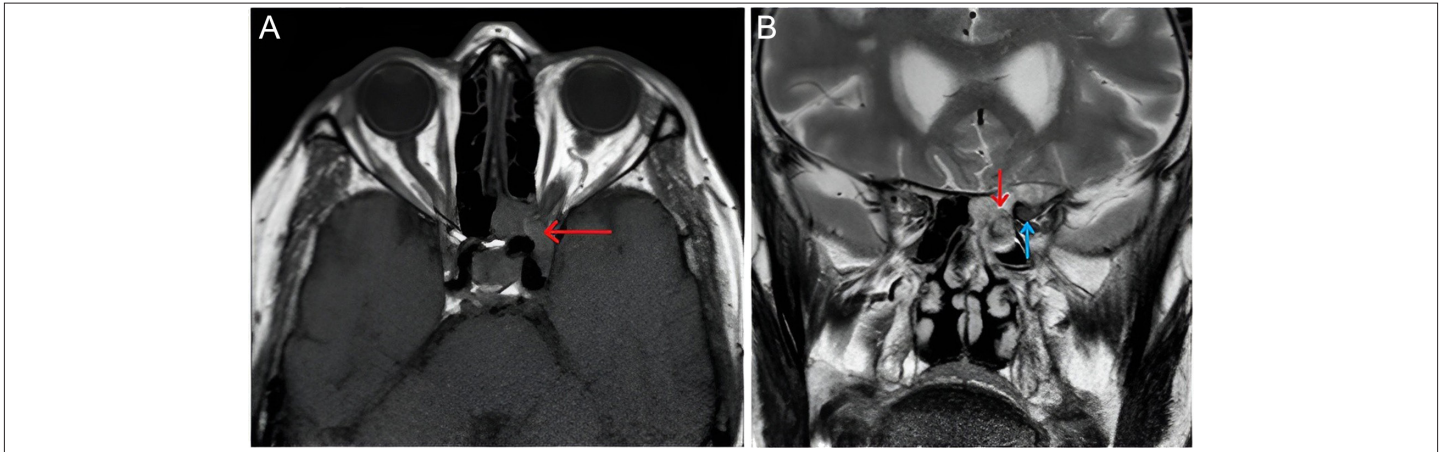


Figure 1. Orbital magnetic resonance images: (A) axial section T1 and (B) coronal section T2 (red arrow: mass located in left orbital apex and left sphenoid sinus and blue arrow: optic nerve).

Postoperative radioactive iodine treatment was applied to the patient who was also found to have lung metastases. When radioactive iodine treatment was not considered sufficient, chemotherapy treatment was started. Intravenous paclitaxel and oral thyroid hormone replacement therapy are still ongoing.

DISCUSSION

Poorly differentiated thyroid carcinoma is a rare type of thyroid cancer with a reported incidence of 2%-15% of all thyroid cancers.⁵ The reason for the incidence variation is geographical effects or differences in histopathological definition.⁴ Less differentiated thyroid carcinoma is seen in older people compared to differentiated thyroid carcinoma and is more common in women with a 1.6 : 1 ratio.⁶ The patient we presented was of advanced age and was a woman.

Depending on the histology, the rate of distant metastases in thyroid cancers varies between 10% and 35%. The incidence of distant metastases in poorly differentiated thyroid cancers is higher than in differentiated thyroid cancers.⁷ Rarely, the first finding may be distant metastasis.⁷ The most common sites of distant metastases are lung and bone.^{7,8}

Our patient's first presentation finding was bone metastasis, and lung metastasis was also detected in the following period.

Nasal cavity and paranasal sinus tumors are generally primary tumors. Metastasis to the paranasal sinuses is less common. When we look at the paranasal sinus metastases, the most common renal cell carcinoma is seen, followed by the lung, urogenital tract, breast, and gastrointestinal tract, respectively.⁹ Commonly involved sites from the paranasal region are the maxillary sinus, ethmoid sinuses, and nasal cavity.⁹ It has been found that 77% of metastases involve a single paranasal sinus.¹⁰

Main Points

- A multidisciplinary approach is required for patients presenting to the emergency department with sudden vision loss.
- Paranasal sinus tumors should be kept in mind in patients presenting with visual loss. Metastases can be seen in patients with a history of cancer.

Metastasis of thyroid carcinomas to the paranasal sinuses is rare. In the literature review by Shimmura et al.¹¹ only 14 cases were identified from 1979 to 2018, the majority of which were found to be follicular thyroid carcinoma. In the same study, metastases were detected mainly in the sphenoid sinus and mostly spread to more than 1 sinus, which is different from other metastases that mostly involve a single paranasal sinus. In a previous study by Mickel and Zimmerman¹² examining sphenoid sinus metastases, a total of 26 patients with sphenoid sinus metastases were found in the literature, and the most common primary sites were lung and prostate in these patients. In the same study, thyroid carcinoma metastasis was detected in 3 patients.

Sphenoid sinus metastases may be asymptomatic or affect adjacent anatomical structures and cause various common symptoms. It may involve adjacent cranial nerves and cause diplopia, ptosis, decreased visual acuity, and facial paresthesia. In addition, it can cause headaches or sinusitis symptoms. In the case report of Renner et al.¹³ epistaxis and anosmia were found as the first findings in a case of thyroid follicular carcinoma with metastasis to the sphenoid sinus. Our patient presented with decreased visual acuity.

Treatment in poorly differentiated thyroid carcinomas is not as standardized as in differentiated thyroid carcinomas because of the relative rarity of the disease and the heterogeneity of inclusion criteria. Therefore, decisions in treating poorly differentiated thyroid carcinomas are based on experience in treating differentiated thyroid cancer. The main treatment is surgery, and the scope of surgery is determined according to preoperative and intraoperative evaluations.⁴ Ibrahimovic et al.⁴ showed that the 5-year regional control is above 81% in cases of poorly differentiated thyroid cancer with total thyroidectomy and clearing of gross disease. If a lymph node is detected in the neck, it is recommended to add neck dissection to the surgery. Our patient was operated on for bone metastasis and the involved rib was removed. However, total removal of metastases in the orbital apex and sphenoid sinus was not performed, considering that it would increase comorbidity due to its proximity to important structures.

In poorly differentiated thyroid carcinomas, the efficacy of radioiodine therapy is variable, thought to be due to heterogeneity and variations in differentiation (14b,15c). Considering its morbidity reduction and

therapeutic benefit, postoperative radioiodine therapy is recommended by Sanders et al⁵ in all cases of poorly differentiated thyroid carcinoma.

In our case, radioactive iodine treatment was given after surgery. However, it could not completely eradicate the disease.

Evidence for external RT in the treatment of poorly differentiated thyroid carcinoma is insufficient. However, it was recommended by Sanders et al⁵ for all patients with T3, all T4, and regional lymph node involvement without distant metastasis. The same authors recommended radioactive iodine treatment if the surgery was completely performed and postoperative radiotherapy if the surgery had to be completed leaving residual tissue. In the presence of distant metastases, the role of radiotherapy is limited to alleviating neck metastases or uncontrollable disease.⁵ Radiotherapy treatment was not considered in our patient.

CONCLUSION

Paranasal sinus tumors are generally primary tumors, and metastasis is less common. However, it should be kept in mind that metastasis may occur if the patient has a concomitant malignancy in his/her history or at the time of evaluation.

Informed Consent: Written informed consent was obtained from the patient who agreed to take part in the study.

Peer-review: Externally peer-reviewed.

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