

A Rare Case Of Metastasis To The Temporal Bone From Prostate Adenocarcinoma

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Citation

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Abstract

Metastases of malignant tumors to the temporal bone are rare. A review of the global literature found only 11 cases of temporal bone metastases from prostate carcinoma. We herein present a case of adenocarcinoma of the prostate that had metastasized to the temporal bone. Physical examination revealed a mass involving the right middle ear, which was seen through the tympanic membrane. Computed tomography (CT) of the head showed a large and irregular mass involving the left temporal bone; resorption of the bone was evident. The neoplastic tissue demonstrated marked positivity for prostate-specific antigen (PSA), confirming the diagnosis of metastasis to the temporal bone from the prostate. When evaluating the differential diagnosis between a primary tumor of the middle ear and a metastasis, the prostate gland should be assessed, detailed immunohistochemical studies should be performed, and serum prostate-specific antigen level should be determined.

INTRODUCTION

Primary tumors of the temporal bone account for about 1% of all head and neck malignant neoplasms. More than 90% are classified as squamous cell or adenocystic carcinoma [1].

Metastasis of malignant tumors to the temporal bone from the prostate is rare. Although axial bone and intracranial metastases are common in patients with prostatic carcinoma [2], a 30-year review of the global literature on tumors of the temporal bone found only 11 cases of metastasis from carcinoma of the prostate [3,4].

In the present paper, we describe a case of adenocarcinoma of the prostate with metastasis to the temporal bone.

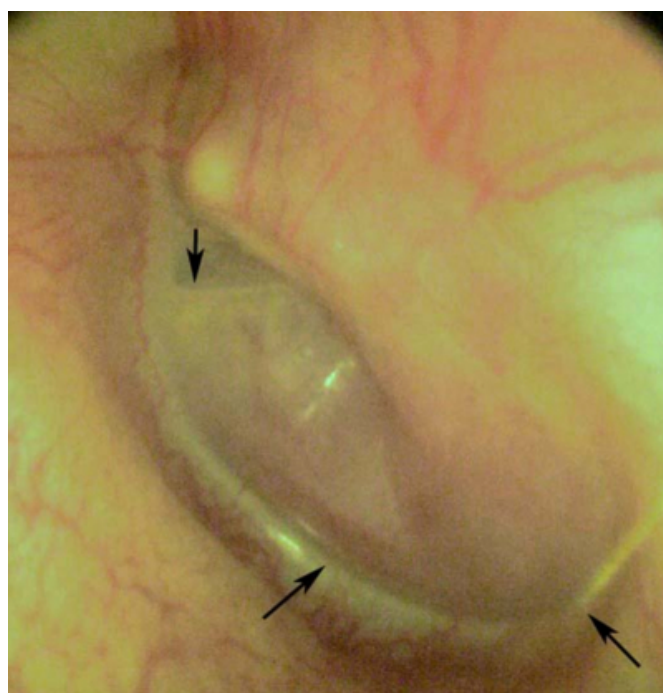
CASE REPORT

A 77-year-old man was initially seen by his local otolaryngology clinic on July 20, 2004, because of gradual onset, left-sided facial palsy. On examination, a mass was visible through the left tympanic membrane.

The patient was referred to our hospital on August 9, 2004. He had complete left-sided facial paralysis, and pure tone audiogram of the left ear revealed deafness. Physical examination demonstrated a mass involving the right middle ear, which was seen through the tympanic membrane (Fig.1).

Figure 1

Figure 1: Tympanic membrane. A mass was seen through the tympanic membrane (arrows).

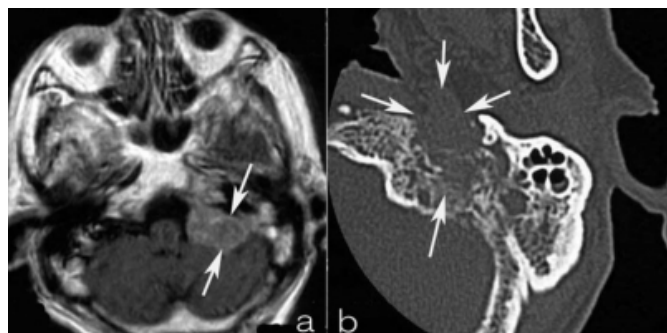


The auricle and external auditory meatus were unremarkable. Magnetic resonance imaging (MRI) (Fig.2a) and computed tomography (CT) (Fig.2b) of the head showed expansive, osteolytic destruction of the left petrous temporal bone and associated soft tissue densities in the left middle

ear.

Figure 2

Figure 2a: Transverse MRI of the head. 2b: Transverse CT of the head.

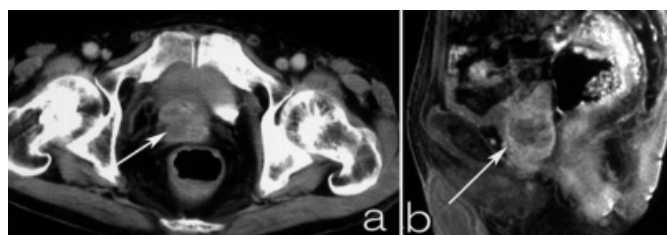


Both images showed destruction of the temporal bone (arrows) by a mass.

Biopsy of the middle ear mass by paracentesis revealed adenocarcinoma. The patient was admitted for a subsequent general physical examination on August 24, 2004. A colonic polyp discovered on endoscopy was not malignant. CT of the neck and the thorax were unremarkable. However, CT (Fig.3a) and MRI (Fig.3b) of the pelvis revealed a prostatic nodule measuring about 3 cm; this appeared to originate in the right lobe of the prostate but had invaded the left lobe over the median line.

Figure 3

Figure 3a: Axial CT scan of the pelvis. 3b: Sagittal MRI of the pelvis.



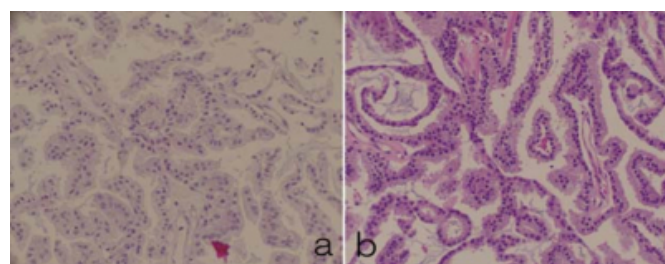
Both images showed the prostate mass invading the spine and pelvis.

A bone scan showed osteoblastic density in the spine and pelvis consistent with metastatic prostatic carcinoma. Serum prostate-specific antigen (PSA) level was 1007.00 ng/ml (normal, <2.5 ng/ml). Biopsy of the middle ear mass revealed irregularly shaped and variably sized glands in the subepithelial connective tissue (Fig.4a). An immunohistochemical study of the ear mass biopsy demonstrated positive staining for PSA in the tumor cells, confirming the prostatic origin of this adenocarcinoma.

By request of the patient and his family, treatment was performed at a local hospital. Biopsy of the prostatic nodule showed moderately differentiated adenocarcinoma that histologically resembled the ear tumor (Fig. 4b). The patient underwent bilateral orchiectomy and was prescribed anti-androgens (bicalutamide 80 mg/day).

Figure 4

Figure 4: Microscopic examination of specimens from the middle ear mass (a) and the prostate (b). The middle ear tumor exhibited irregularly shaped and variably sized glands in the subepithelial connective tissue (H&E, original magnification $\times 100$), and the prostate histologically resembled the ear tumor (H&E, original magnification $\times 100$).



The prostate and temporal bone lesions were stabilized and remained stable. However, the tumor seen through tympanic membrane disappeared and facial palsy gradually resolved without recovery of deafness. The patient has done well for 26 months, and remains alive with stable disease as of the latest follow-up in September 2006. He is now followed up by an urologist at the treating hospital and at his local otolaryngology clinic.

DISCUSSION

Primary tumor of the prostate is well known to metastasize; secondary lesions usually appear at infraclavicular sites, but only rarely in the supraclavicular organs. The osseous metastatic character of prostatic carcinoma is well known, the most common osseous metastatic sites of this disease are the spine, sacrum, and pelvis [5].

Direct invasion of the middle ear or temporal bone by malignant tumors arising in the parotid gland or nasopharynx is common [6]. The most common malignancy giving rise to distant metastases in the temporal bone is breast cancer [4, 5].

Diagnosis of metastases to the temporal bone is often delayed; by the time the diagnosis is made, the tumor has often invaded widely, sometimes to involve the facial nerve [3]. In addition, when a metastasis to the temporal bone is diagnosed, the primary tumor is generally at an advanced

stage. Furthermore, in the case of prostatic tumors, patients tend to be relatively old [3]; therefore, treatment tends to be palliative. In the present case, surgical removal was not attempted and anti-androgens were prescribed, providing effective disease control. However, the prognosis in such cases is variable; survival varies from 1 to 10 years [2, 3, 5].

On reviewing the literature, the most common clinical symptom in patients with secondary malignant tumors of the temporal bone was found to be facial palsy, followed by symptoms such as hearing loss and otalgia [3]. Facial palsy caused by metastatic tumor tends to have a progressive onset over at least three weeks, and it is usually accompanied by accessory neurological symptoms, including hearing loss, vertigo, and tinnitus. In this case, examination of the tympanic membrane prompted us to also initially consider schwannoma of the facial nerve in the differential diagnosis. However, histology of the middle ear mass showed adenocarcinoma. We therefore speculated that the temporal bone lesion was a distant metastasis and searched for a primary tumor. Histological analysis of the middle ear specimen revealed morphological and immunohistochemical features analogous to those found in specimens obtained from the prostate neoplasm. Both lesions exhibited marked positivity for prostate-specific antigen (PSA), confirming the diagnosis of metastasis to the temporal bone from the prostate.

When evaluating the differential diagnosis between a primary tumor of the middle ear and a metastasis, the prostate gland should be considered as the site of the primary lesion, detailed immunohistochemical studies should be performed, and serum prostate-specific antigen level should be ascertained.

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References

1. Thevarajah S, Carew J, Selesnick SH: Bilateral squamous cell carcinoma of external auditory canal. *Otolaryngol Head & Neck Surg* 2005; 132: 960-962.
2. Castardo J. E, et al. Intracranial metastases due to prostatic carcinoma. *Cancer* 1983; 52: 1739-1747.
3. Aysegul A. Sahin, et al.: Temporal bone involvement by prostatic adenocarcinoma: report of two cases and of the literature. *Head&Neck* 1991; 13: 349-354.
4. Grijalba Uche M, Bonaut Mendia JF: Metastases to the temporal bone. A report of two cases. *Acta otorhinolaryngol Esp.* 1995; 46: 441-443.
5. Saitoh H, Hida M, Shinbo T, et al. Metastatic patterns of prostatic cancer: correlation between sites and number of organs involved. *Cancer* 1984; 54: 3078-3084.
6. Hoshino T, et al: Metastatic tumor of the inner ear: A histological report. *J Laryngol Otol* 1972; 86: 697-707.
7. Berlinger N, et al: Patterns of involvement of the temporal bone in metastatic and systemic malignancy. *Laryngoscope* 1980; 90: 619-627.

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