

## CASE REPORT

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### **Metastatic Malignant Melanoma of the Cerebellopontine Angle: A Case Report**

**Elif Baysal, MD., Attila Dezso, MD., Richard Byers FRCPATH, Sara McDermott, Richard Ramsden FRCS**

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From the Otolaryngology  
Departments of Otolaryngology (E.  
Baysal, A. Dezso, R. Ramsden)  
and Histopathology (R. Myers, S.  
Mc Dermott) Manchester Royal  
Infirmary, Manchester, United  
Kingdom

#### Correspondence

Richard Ramsden, FRCS  
Professor of Otolaryngology,  
Manchester Royal Infirmary  
The full address is Department of  
Otolaryngology, Manchester Royal  
Infirmary Manchester UK  
M13 9WL  
Tel: 0044 161 276 4639  
E-mail: richard.ramsden@man.ac.uk

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We describe a case of secondary (metastatic) malignant melanoma presenting as cerebellopontine angle tumor of short duration; the patient had a longer history of cutaneous melanoma excised 25 years earlier. These tumors are very rare. Neurotologists should always bear in mind the possibility of a secondary tumor in the differential diagnosis of vestibular schwannoma and should take a careful history of previous malignancy. The histologic and radiologic features of the tumor are described, and the scant literature is reviewed.

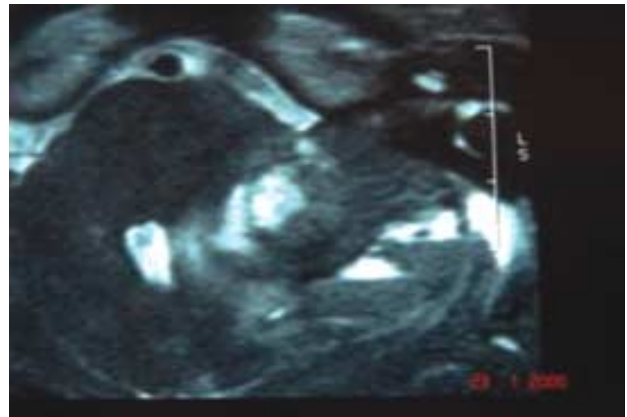
Primary malignant melanoma usually originates in the skin but can arise rarely from other tissue including the leptomeninges.<sup>[1]</sup> The central nervous system also may be involved by metastatic malignant melanoma and is in fact the third most common site for secondary melanoma deposits. Intracranial metastasis is often diffuse and may involve both parenchyma and leptomeninges.<sup>[2,3]</sup> Primary and secondary malignant tumors are rarely seen in the cerebellopontine angle (CPA), and metastasis of malignant melanoma to the CPA is uncommon.<sup>[4]</sup> In this article, we report a case of metastatic melanoma of the CPA with symptoms of dizziness, imbalance, and unilateral hearing loss in a patient who had had cutaneous disease 25 years earlier.

### CASE REPORT

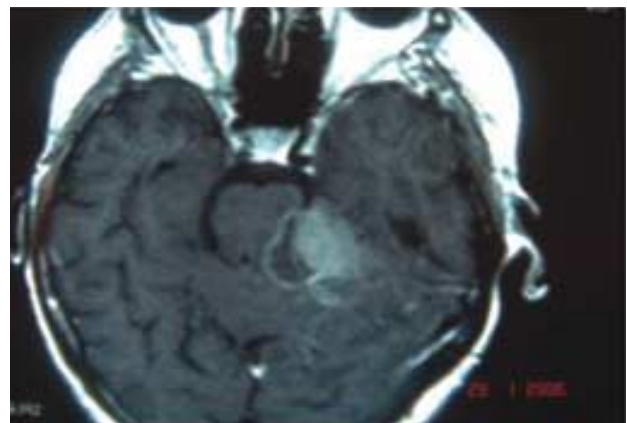
A 68-year-old woman was referred to the otolaryngology clinic complaining of unilateral hearing loss and tinnitus of 4 months' duration and dizziness and imbalance of 2 weeks' duration. She had a history of a raised pigmented lesion excised from the right calf 25 years earlier; this proved to be a malignant melanoma. Ten years later, there was a recurrence in the right groin, and block dissection of locoregional metastasis of the inguinal lymph nodes was performed. Within the year prior to the present episode, she developed another cutaneous lesion over the right knee. Histologic examination again confirmed the diagnosis of malignant melanoma.

Examination on presentation revealed a profound left-sided sensorineural hearing loss, positive rombergism, and minimal right-sided past pointing. The patient had no facial weakness or other evidence of cranial nerve involvement. She had firm red skin lesions on her left arm and right knee. On audiometry, there was a total hearing loss on the left side and a high-tone sensorineural loss on the right. Magnetic resonance imaging (MRI) revealed a mass in the left CPA measuring 5 x 4 cm in diameter extending into the internal auditory canal. It compressed the left cerebellar hemisphere and caused distortion of the fourth ventricle (Figures 1 and 2). The appearances on T2-weighted imaging suggested the presence of multiple areas of

hemorrhage into the tumor, and both T2 and T1 sequences with contrast indicated areas of possible melanin accumulation.



**Figure 1:** Axial T2-weighted fast spin echo image demonstrating a heterogeneous mass in the left CPA cistern and adjoining IAM. The lesion is causing effacement and some lateral displacement of the fourth ventricle. There are multiple fluid sedimentation levels within the lesion indicating areas of likely haemorrhage. Multiple areas of marked hypointensity are also seen most likely representing areas of melanin.

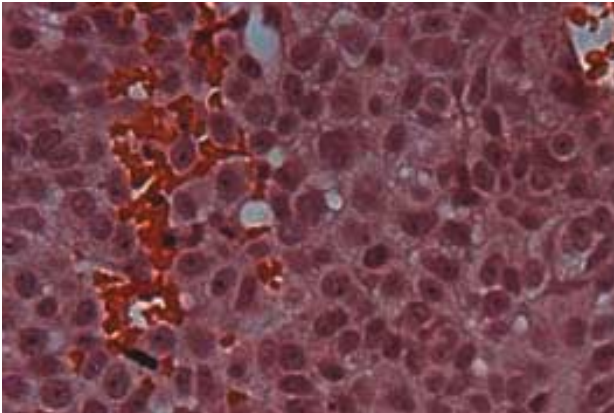


**Figure 2:** Axial post-contrast T1-weighted spin echo image demonstrating areas of both confluent and ring enhancement (no pre-contrast scans were performed). Some of the apparent areas of enhancement could also reflect sub-acute blood or melanin.

Debulking and partial resection were recommended for relief of brain stem compression and to confirm the histologic diagnosis, and this was carried out via the translabyrinthine approach under general anaesthesia. The tumor was fragile and very haemorrhagic. It was adherent to and invading the dura. Pathologic analysis

of frozen sections were consistent with melanoma. After an initial good recovery, the patient experienced a sudden drop in her level of consciousness, and a posterior fossa bleed was suspected. We reoperated for hemostasis, but she failed to recover and died 3 days after the repeat surgery.

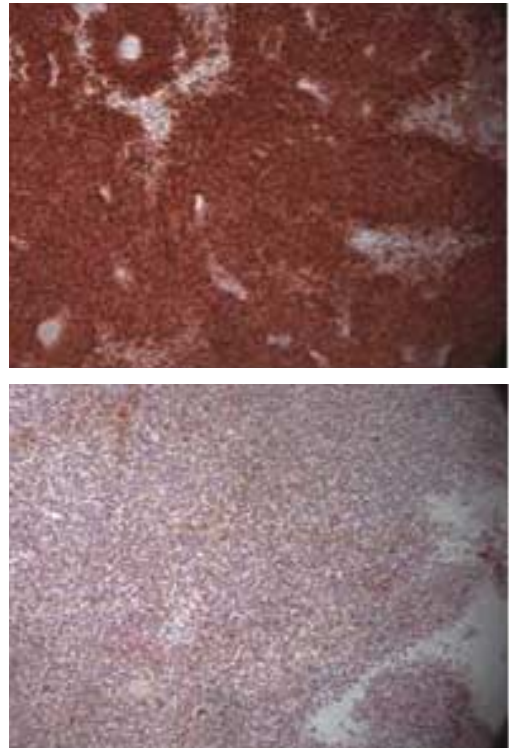
Formal histologic examination of the skin and intracranial tumors showed the typical appearance of malignant melanoma with abundant eosinophilic cytoplasm, large nuclei, eosinophilic chromatin, and prominent nucleoli (Figure 3). The tumor cells were positive for melan A with S100 and focally positive for HMB-45 (Figure 4).



**Figure 3:** Metastatic malignant melanoma from cerebello-pontine angle. H and E x 200. The tumour cells are large and show characteristic features of melanoma cells –namely abundant eosinophilic cytoplasm, large nuclei, eosinophilic chromatin and prominent nucleoli

## DISCUSSION

Malignant melanoma of the CPA is rare. Whinney and colleagues and Kan and colleagues both describe cases of primary tumors, although Kan's patient seemed to have a tumor that arose from the region of the jugular bulb, and it was thought preoperatively to be a jugular foramen meningioma<sup>[1,4]</sup>. Both Kan and Whinney's patients underwent surgical removal of the tumors, and at the time of reporting 12 and 18 months after surgery, respectively, they were alive and tumor free.



**Figure 4:** Tumour cells stain positive for Melan A (left) and focally positive for HMB 45 (right)

Malignant melanoma is the third most common source of central nervous system metastasis after breast and bronchus, but deposits in the CPA have been only rarely reported. The first case of metastatic malignant tumor of the CPA, from a primary oropharyngeal epithelioma, was reported by Cornil and colleagues in 1934, and there have been very few reports since then.<sup>[5]</sup> In a series of 1354 cases of CPA tumors reported by Brackmann and colleagues in 1982, only 0.2% were found to be metastases.<sup>[6]</sup> In our own unpublished series of more 2000 CPA tumors seen during a 28-year period, only 2 patients with pure CPA metastasis have been seen. In addition to the case reported in this paper, there was another case of secondary deposit in the intrameatal facial nerve from a primary breast carcinoma, which was recently reported.<sup>[7]</sup> Secondary deposits in the temporal bone with involvement of the facial nerve and extension into the CPA are, of course, less uncommon.<sup>[8]</sup> Malignant melanoma metastasizes to the CPA by hematogenous seeding, and because of this process, early neurovascular invasion and extension occur and

result in sensorineural hearing loss, tinnitus, and vertigo.<sup>[8-10]</sup> Arriaga and colleagues, reporting the experience of the House Ear Clinic, describe 3 cases of unilateral secondary CPA melanoma. They point out several features that should make one suspect the diagnosis—short history of deafness, facial paralysis, lower cranial nerve involvement, and headache, combined with a previous history of surgery to remove a skin lesion that may have been many years in the past.<sup>[11]</sup> Solitary CPA metastasis from malignant melanoma also has been reported by Kingdom and colleagues.<sup>[10]</sup> Their patient also presented with a short history of audiovestibular symptoms and facial paralysis with a history of excision of a cutaneous melanoma 4 years previously. These authors make the point that the initial hematogenous deposit is likely to be within the internal auditory canal, with subsequent rapid extension into the CPA. Van Wiltenburg et al report two interesting cases of CPA metastasis from orbital melanoma, one which occurred 16 years after enucleation of the eye<sup>(12)</sup>. The patient reported in our paper had a short history of 4 months' hearing loss and imbalance but no facial nerve involvement. Most remarkable was the very long interval from the initial skin lesion—25 years—although there had been other recurrences in the meantime. No other cases of unilateral CPA metastasis from malignant melanoma appear in the literature.

Interestingly, there are several cases of bilateral CPA metastasis from malignant melanoma. In the very sparse literature on the subject, bilateral involvement is reported by Lee and Weber, Shinogami and colleagues, Delerue and colleagues, and Tu and colleagues.<sup>[13-16]</sup>

The MRI characteristics of metastatic malignant melanoma are reported as hyperintensity on T1 sequencing and hypointensity on T2 sequencing,<sup>[17]</sup> but in our case, the tumor was hyperintense in T1 and heterogenous in T2. The striking features were the presence of multiple fluid levels suggesting hemorrhage into the substance of the tumor seen on T2 imaging and the ringlike enhancement on the T1 sequences with contrast. Intralesional hemorrhage in intracranial metastatic malignant melanoma was well described and

illustrated by Puca and colleagues, and these authors point out that malignant melanoma is the second most common cause of neoplastic intracranial hemorrhage after chorioncarcinoma.<sup>[18]</sup>

The histologic appearances of our patient's tumor were quite typical, with cellular and nuclear pleomorphism, eosinophilic cytoplasm and chromatin, and prominent nucleoli, best seen on hematoxylin and eosin staining. In addition, the strongly positive reaction on melan A and HMB-45 confirmed the diagnosis. The latter is a melanoma marker employing mouse monoclonal antibody. No reaction is observed with intradermal naevi, normal adult melanocytes, or nonmelanocytic cells.

Koh and colleagues state that metastasis delayed by more than 10 years from primary diagnosis is rare,<sup>[19]</sup> but with the increasing incidence of cutaneous malignant melanoma, physicians may begin to see more cases of late recurrence. Crowley and Seigler point out that a 10-year disease-free period following treatment of a primary malignant melanoma cannot be considered a cure.<sup>[20]</sup> Nevertheless, intracerebral metastasis more than 10 years after the initial diagnosis is quite exceptional<sup>[18]</sup>. The pathogenesis of late metastasis is not clear, but the role of sex hormones, the thickness of the primary tumor (Clark level IV and V), and the biologic and immunologic behavior of silent malignant melanoma cells have been said to be important factors,<sup>[19-22]</sup> although this remains an area of some debate.

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#### REFERENCES

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1. Whinney D, Kitchen N, Revesz T, Brookes G. Primary malignant melanoma of the cerebellopontine angle. *Otol Neurotol* 2001; 22:218-22.

2. Retsas S, Gershuny AR. Central nervous system involvement in malignant melanoma. *Cancer* 1988;61:1926-34.
3. Wasserstrom WR, Glass JP, Posner JB. Diagnosis and treatment of leptomeningeal metastases from solid tumors: experience with 90 patients. *Cancer* 1982;49:759-72.
4. Kan P, Shelton C, Townsend J, Jensen R. Primary malignant cerebellopontine angle melanoma presenting as a presumed meningioma: case report and review of the literature. *Skull Base* 2003;13:159-66.
5. Cornil L, Paillas JE, Vague J. Localisation pontocérébelleuse métastatique d'un épithélioma du cavum. *Rev Neurol (Paris)* 1934;67:106-11.
6. Brackmann DE, Bartels LJ. Rare tumors of the cerebellopontine angle. *J Otolaryngol* 1982;34:89-103.
7. Suryanarayanan R, Dezso A, Ramsden RT, Gillespie JE. Metastatic carcinoma mimicking a facial nerve schwannoma: the role of computerized tomography in diagnosis. *J Laryngol Otol* 2005;119:1010-2.
8. Berman JM, Farkashidy J, Jahn AF, Hawke M. Peripheral facial paralysis secondary to metastatic malignant melanoma: a clinicopathologic report. *Arch Otolaryngol* 1979;105:51-2.
9. Maddox HE 3rd. Metastatic tumors of the temporal bone. *Ann Otol Rhinol Laryngol* 1967;76:149-65.
10. Kingdom TT, Lalwani AK, Pitts LH. Isolated metastatic melanoma of the cerebellopontine angle: case report. *Neurosurgery* 1993;33:142-4.
11. Arriaga MA, Lo WW, Brackmann DE. Metastatic melanoma to the cerebellopontine angle: clinical and imaging characteristics. *Arch Otolaryngol Head Neck Surg* 1995;121:1052-6.
12. Van Wiltenburg R, Sevick RJ, Clark AW, Burger PC, LeBlanc FE. Choroidal melanoma metastasis as a rare cause of cerebellopontine lesion: 2 case reports. *Canadian Association of Radiologists Journal* 1998; 49:185-9.
13. Lee WT, Weber PC. Melanoma metastasis masquerading as bilateral acoustic neuromas. *Otolaryngol Head Neck Surg* 2005;132:505-6.
14. Shinogami M, Yamasoba T, Sasaki T. Bilateral isolated metastases of malignant melanoma to the cerebellopontine angle. *Otolaryngol Head Neck Surg* 1998;118:276-9.
15. Delerue O, Destee A, Devos P. Bilateral metastases in the cerebellopontine angle. *J Neurosurg Psychiatry* 1991;54:562-3.
16. Tu AS, Wang H, Harris-McCorkle L, Saunders JR Jr. Bilateral involvement of the cerebellopontine angles by malignant melanoma metastasis: a case report. *Md Med J* 1994;43:967-70.
17. Woodruff WW Jr, Djang WT, McLendon RE, Heinz ER, Voorhees DR. Intracerebral malignant melanoma: high-field-strength MR imaging. *Radiology* 1987;165:209-13.
18. Puca A, Vari R, Carbone A. Very late cerebral metastasis from malignant melanoma. *Br J Neurosurg* 1998;12:63-5.
19. Koh HK, Sober AJ, Fitzpatrick TB. Late recurrence (beyond ten years) of cutaneous malignant melanoma: report of two cases and a review of the literature. *JAMA* 1984;251:1859-62.
20. Crowley NJ, Seigler HF. Late recurrence of malignant melanoma: analysis of 168 patients. *Ann Surg* 1990;212:173-7.
21. Brunson KW, Beattie G, Nicolson GL. Selection and altered properties of brain-colonising metastatic melanoma. *Nature* 1978;272:543-5.
22. Saha S, Meyer M, Kremenz ET, Hoda S, Carter RD, Muchmore J, et al. Prognostic evaluation of intracranial metastasis in malignant melanoma. *Ann Surg Oncol* 1994;1:38-44.