PRIMARY MALIGNANT MELANOMA OF THE EXTERNAL AUDITORY CANAL: CT FEATURES

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Malignant melanoma (MM) is a malignancy with poor prognosis. Between 25% and 30% of primary cutaneous MM occur in the head and neck, and of these, 5%-10% arise on the external ear.[1-4] The helix is the most common site, followed by the lobule, the tragus-preauricular skin, and the concha.[3] Primary melanoma of the external auditory canal (EAC) is rare. We report a case of a primary malignant melanoma of the external auditory canal and describe its computed tomographic (CT) features.

Case Report

A 65-year-old man presented with a two-year history of painful mass in the left ear, with recent increase in size and ipsilateral hearing loss. There was no previous history of ear problem, trauma or surgery. On physical examination, the EAC was obliterated by an ulcerated red brownish mass. The pinna was intact with no evidence of regional lymphnode enlargement. The facial nerve function was normal. The endoscopic biopsy microscopically showed malignant epithelioid melanocytes with pigmented granular cytoplasm, large nuclei and prominent eosinophilic nucleoli expanding in the dermis. Mitoses were present and there was brisk lymphoid infiltrate at the base. On plain skull x-ray, no obvious bony changes were observed. Temporal bone CT scan in transverse and coronal planes demonstrated a soft tissue mass obliterating the EAC and eroding its inferior margin as well as the roof of the temporo-mandibular joint (TMJ). The mass was invading the hypotympanic cavity through the tympanic membrane. The inferior tympanic bony margin was partially eroded. The tumor had involved the ossicular chain with erosion of the malleus and the long process of the uncus. The mass was moderately and homogeneously enhancing after intravenous contrast injection. The epitympanic cavity, the mastoid cells and the internal ear were preserved. No intracranial extensions or metastases were detected. Magnetic resonance imaging (MRI) examination was not done due to lack of facilities. The patient underwent a subtotal tumor excision with regional lymph node dissection. The surgical treatment was followed by multiple sessions of radiotherapy. Six months later, the patient presented with a large local recurrence, intracranial and lymphnode metastases, and died one month later.

FIGURE 1. Transverse CT scan of the left petrous bone. Soft tissue nodular mass occluding the EAC and extending into the tympanic cavity through the eardrum.

FIGURE 2. Coronal CT scan of the left petrous bone. The tumor is eroding the ossicular chain, the EAC and tympanic inferior margins as well as the TMJ roof.

FIGURE 3A. Low-power photomicrograph of the lesion.

FIGURE 3B. High-power photomicrograph of the lesion. Tumor mass is shown invading the reticular dermis.

Discussion

The incidence of malignant melanoma is increasing in all parts of the world. The disease occurs mainly on chronically sun-damaged skin, especially on the facial of elderly individuals. In a review of 102 melanomas of the external ear, Byers et al.[3] noted that the median age at diagnosis was 56 years (range 8-83) and that 75% were males. Superficial spreading and nodular melanomas are the most common histological types. Tumor thickness and nodal metastases adversely affect the prognosis of patients with MM of the external ear. If the tumor measures less than 3 mm in thickness, the incidence of nodal metastases is 21%, whereas if it exceeds 3 mm the incidence rises to 61%.[3] The five-year survival rate is 75% when the regional lymphnodes are negative, and only 12% when they are positive. McKenna et al. have described a rare example of primary malignant melanoma of the middle ear.[4]

Microscopically, our case showed nodular component of a malignant melanoma in which atypical melanocytes expand to fill the papillary dermis without a nested pattern, either in the overlying, partially ulcerated epidermis or the

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dermis, and no radial component. Tumor-infiltrating lymphocytes were confined to the periphery of the nodule. Under high-power photomicrograph, the malignant epithelioid cells no longer exhibited adhesion into nests. There were numerous mitoses indicating actively proliferating lesion. There were also brisk tumor-infiltrating lymphocytes.

The imaging features of this tumor have rarely been reported. Plain x-ray films are often normal, showing bony changes only in the late stages. The CT findings are nonspecific. In the case reported by Milbrath et al.,[5] CT scan demonstrated a soft tissue mass within the external auditory canal without bony erosion or tympanic invasion. In our case, the tumor was far more invasive, eroding the inferior bony margins of the EAC and invading massively the hypotympanic space through the tympanic membrane, and partially destroying the ossicles. All these findings explained the incomplete surgical resection and the rapid recurrence and spread of the tumor despite the postoperative radiotherapy.

On MRI, melanin classically shows a characteristic signal intensity as hypersignal on T_1-weighed image, and relatively low-signal intensity on T_2-weighed image. But these findings do not seem to be constant. Indeed, in the case reported by Milbrath et al., the tumor was hyperintense on T_2-weighed image. Also Kingdom et al.[6] reported an isolated metastatic melanoma in the cerebello-pontine angle showing a low signal on T_1-weighed image and a hypersignal on T_2-weighed image The tumor was moderately enhanced after intravenous paramagnetic contrast injection (Gadolinium DTPA). Surgical resection, lymphnode dissection and radiotherapy are the treatment of choice for most cutaneous melanomas associated with lymphnode metastases.

Despite its rarity, malignant melanomas should be systematically excluded as a possible cause of a nodular mass of the external auditory canal.

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