CASE REPORT

Diagnosis of metastatic malignant melanoma in parotid gland

Dimitrios Andreadis a, Athanasios Poulopoulos a,*, Alexandros Nomikos b, Apostolos Epivatianos a, Calypso Barbatis b

a Department of Oral Medicine and Maxillofacial Pathology, Dental School, Aristotle University of Thessaloniki, Thessaloniki 54124, Greece
b Department of Histopathology, Red Cross Hospital of Athens, Athens 11526, Greece

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Summary Parotid gland is an extremely rare location for primary malignant melanoma and the majority of reported melanoma cases in parotid appear to represent metastasis from the skin of head and neck areas. We describe a rare case of a malignant melanoma of the oral cavity which had metastasized in parotid gland and we present the microscopic and immunohistochemical findings in parotid gland metastasis. Metastatic infiltrations were observed in peri- and intraparotid lymph nodes and the characteristic microscopic appearance together with the immunoreactivity of neoplastic cells for vimentin, S-100 protein and HMB-45 established the final diagnosis.
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Introduction

Primary melanoma of the parotid gland is an extremely rare event and salivary gland melanomas are nearly always best regarded as metastases1 associated with in and around the gland, lymph node metastasis from a head and neck cutaneous primary melanoma.2 The routine preoperative diagnostic procedure for parotid melanomas that enable accurate staging, include computerized tomography, magnetic resonance imaging and fine-needle aspiration cytology (FNAC).3 For melanoma patients with clinically palpable lymphadenopathy in the region of the parotid gland, most investigators advocate a therapeutic parotidectomy and ipsilateral modified radical neck dissection,4 whereas adjuvant radiotherapy and chemotherapy may also be given. Prognosis is generally poor, and only rarely, patients may survive a long period of time following surgery.5

Intraoral melanomas are uncommon accounting for 0.5% of oral malignancies.6 Nearly 80% of the cases affect hard palate, the upper and lower gingivae and buccal mucosa.7 They exhibit far more aggressive behaviour than cutaneous melanomas.6 Despite the anatomic site of the oral melanomas, prognosis is quite poor with a 15% five-year survival.
Metastases spread to regional lymph nodes, lungs, liver, brain and bones due to satellite formation, angiolymphatic invasion and submucosal spread.

The aim of our study is to present a rare case of malignant melanoma of parotid gland as a metastasis from the oral cavity.

Case report

A 65-year-old male, with a history of a treated, oral melanoma on the anterior maxillary alveolar ridge, without evidence of any local invasion or distant metastasis, based on CT images, six months before, was presented again with a two-month, painful swelling, located to the angle of the right mandible. FNAC’s findings of the parotid swelling were indicative for a malignant melanoma. A total parotidectomy was performed in Red Cross Hospital, Athens Greece, and formalin-fixed, paraffin-embedded sections were studied histochemically and immunohistochemically with markers S-100 protein (N 1573, Dakocytomation, Glostrup, A/S Denmark), vimentin (N 1521, Dakocytomation, Glostrup, A/S Denmark) and HMB 45 using an Envision/HRP automated technique (Dakocytomation, Glostrup, A/S Denmark). Antigen retrieval was performed by microwaving in citrate buffer.

Microscopically, the peri and intraparotid lymph nodes were infiltrated by malignant melanoma, whereas the adjacent parotid tissue was clear (Fig. 1a). Metastatic lesion was consisted by epithelioid neoplastic cells with foamy cytoplasm, marked cytologic and nuclear atypia, nuclear grooves, large eosinophilic nucleoli, and abundant atypical mitotic figures. Areas with melanin pigmentation, necrosis with haemorrhage and marked fibroblastic response were also seen (Fig. 1b).

Immunohistochemically, neoplastic cells showed strong nuclear and cytoplasmic reactivity for S-100 protein (Fig. 2a) and immunoreactivity for vimentin and mainly for HMB45 (Fig. 2b) was also a characteristic consistent feature of the great majority of the neoplastic cells whereas there was not immunostaining with AE1/AE3 cytokeratins.

Discussion

Although melanocytes can exist in the intralobular duct of the parotid gland potentially serving as origin for primary melanoma, almost all cases of parotid melanomas appear to represent metastatic lesions, often from cutaneous head and neck primaries. Noteworthy, cutaneous melanoma is the second after squamous cell carcinomas of the head and neck region most common metastatic tumor of the parotid gland, accounting for approximately 40% of cases. The direct invasion of melanoma from adjacent soft tissue or skin is a possibility but uncommon way to parotid tissue

Figure 1  (a) The metastatic melanoma in lymph node is separated from the intact, adjacent parotid tissue (Hematoxylin/eosin ×100). (b) Histologic appearance of metastatic melanoma in parotid lymph node characterized by infiltration with epithelioid neoplastic cells showing atypical mitotic figures, areas with melanin pigmentation, necrosis with haemorrhage and marked fibroblastic response (hematoxylin/eosin ×300).

Figure 2  (a) Strong nuclear and cytoplasmic reactivity of neoplastic cells for S-100 protein (envision-HRP ×300). (b) Immunoreactivity for HMB45 of the neoplastic cells (envision-HRP ×300).
and metastasis of head and neck melanoma in parotid results by intralymphatic spread of tumor in the area of lymphatic drainage of the parotid lymph nodes—including forehead, anterior frontal and temporal region, eyelids and conjuctiva, lacrimal gland, anterior ear, cranial vault and posterior cheek regions. It is more inclined to metastasize into regional lymph nodes and gland. The treatment of choice for primary and metastatic melanoma in parotid is wide excision, but prognosis even with treatment appears to be poor. It has been recommended that patients undergoing regional lymphadenectomy for primary melanomas attention may be given in salivary glands either for parotidectomy as well.

In contrast to cutaneous melanoma, oral malignant melanoma typically presents a more aggressive vertical growth phase, with invasion of the underlying submucosa. It grows rapidly, may be flat or raised or nodular, asymptomatic initially but may later become ulcerated, painful and may bleed. It is more inclined to metastasize into regional and distant sites or recur locally, exhibiting cervical lymph node metastases in 5–48% of cases at the time of diagnosis. Mucosal melanomas have a poor prognosis with a mean survival rate less than cutaneous accounting for only 17,1%.

Malignant melanoma is easily identified microscopically because of its junctional activity, diffuse arrangement of round or spindle cells with abundant eosinophilic cytoplasm, marked cytologic atypia, nuclear grooves, folds and pseudo-inclusions, large eosinophilic nucleioli, and abundant mitotic figures, some of them atypical. These findings are accompanied by prominent melanin pigmentation, necrosis and invasion of the surrounding tissue. Immunohistochemistry such as positive staining for vimentin, S-100 protein, HMB-45, MART-1/Melan A, tyrosinase, NKI/C-3 and microphthalmia transcription factor (MiTF) aid the diagnosis. Vimentin is the most consistent but the least useful diagnostically. Positivity for S-100 is nonspecific but due to the fact that S-100 is negative in most of the tumors that enter in the differential diagnosis, S-100 staining is very important. HMB 45 is a much more specific marker than S-100 protein. Melan A is positive in approximately 80% of melanomas. The positivity of MiTF is in the range of over 90%.

In conclusion, in cases of head and neck malignant melanomas attention may be given in salivary glands either have or not any symptoms. Preoperative CT/MRI examination of head and neck region including major salivary glands and their lymph nodes is necessary. Furthermore, any postoperative clinically palpable lymphadenopathy in the region of the parotid or submandibular gland may be associated with a metastasis of malignant melanoma and FNA cytology detection is necessary for the definition of diagnosis.

References