Primary Malignant Melanoma of the Gingiva: A Case Report and Review of Literature

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ABSTRACT

Mucosal melanoma of the head and neck is a relatively rare condition that has been poorly understood, characterized and studied. A 28-year-old male patient reported a swelling in relation to the right upper incisor teeth. The lesion was mobile, with slight bleeding on probing. Differential diagnosis of gingival hyperplasia/fibrosis, giant cell epulis, Kaposi’s sarcoma, and malignant melanoma were kept. Histopathological sections showed sheets of pleomorphic spindle cells with intracytoplasmic brown-black pigment, involving the lower part of the squamous epithelium. Tumor cells were positive for S-100 and HMB-45 (Human Melanoma Black) immunostain and a diagnosis of malignant melanoma was rendered. The patient underwent partial maxillectomy and the case was categorized as stage II. He also received regional radiotherapy; however, after five months, the patient presented with a metastasis to the lymph nodes that was confirmed on fine needle aspiration cytology (FNAC). The patient underwent radical neck dissection that showed a large tumor mass. In contrast to cutaneous melanoma, the mucosal melanomas have an aggressive vertical growth phase. Different cell types, like spindled, plasmacytoid, and epithelioid may be observed. The treatment of choice is complete excision with adequate negative margins. The role of radiotherapy is not clearly defined since malignant melanoma is relatively insensitive to radiation. The prognosis for mucosal melanoma is generally quite poor because of its tendency to invade and cause early hematogenous metastasis. Nodal involvement reduces survival time and multiple local recurrences are the most common cause of treatment failure.

Keywords: Malignant melanoma, Gingiva, HMB-45, Mucosal melanoma, Head and neck.

INTRODUCTION

Mucosal melanoma of the head and neck is a relatively rare condition, accounting for less than 1% of all melanomas, more common in the elderly (6th to 8th decades). 1,2 It is usually diagnosed in an advanced clinical stage, with a rate of 5 to 48% of regional and 4 to 14% of distant dissemination. 3,4 Because of its rarity, mucosal melanoma is poorly understood, characterized, and studied. Here, we present a case report of malignant melanoma of the oral cavity in the region of upper gingiva with review of related literature.

CASE REPORT

A 28-year-old male patient reported the Department of Dentistry with the complaint of a swelling in relation to the right upper incisor teeth, present for 40 days. The swelling was asymptomatic. The lesion measured approximately 2 cm in diameter and was mobile, with slight bleeding on probing. Surface of the swelling was polypoidal, corrugated and mucosa covered with brownish-black discoloration. On the basis of clinical examination, a differential diagnosis of gingival hyperplasia/fibrosis, giant cell epulis and Kaposi's sarcoma, or a melanotic lesion was made. There was no history of smoking or tobacco chewing. The routine blood investigations were found to be normal and the patient was nonreactive for HIV 1 and 2. A biopsy was taken.

Histopathological sections of the biopsy showed an ulcerated polypoidal growth composed of sheets and fascicles of oval to spindle tumor cells, displaying moderate pleomorphism with presence of tumor giant cells and frequent mitosis. There was involvement of the lower part of the squamous epithelium by the tumor cells (Fig. 1). Some of the tumor cells showed fine intracytoplasmic brown-black pigment, which was confirmed to be melanin on Masson Fontana and positive for S-100 and HMB-45 (Human Melanoma Black) immunostain (Fig. 2). There was no past history of a pigmented lesion at the given site or of any cutaneous lesion that had been excised or had spontaneously regressed. Based on these findings, a diagnosis of primary mucosal malignant melanoma was rendered. Following this, the patient underwent partial maxillectomy on right side. The maxillectomy specimen showed a 3.5 × 2 × 2 cm brown-black growth extending from the region of the upper right central incisor teeth up to the right canine that exhibited severe mobility (Fig. 3). The sections from excision specimen showed similar histopathological features as in the biopsy. The underlying bone and all the resection limits were free of the tumor. Based on the clinical staging system for primary oral malignant melanoma, the present case was...
categorized as stage II. Subsequently, the patient received regional radiotherapy for one month and was well. However, after 5 months, the patient presented with a right submandibular mass. The lesion was subjected to fine needle aspiration cytology (FNAC) in which a black colored fluid was aspirated. The cytology smears showed predominantly necrosis with occasional scattered atypical cells with degenerative changes along with pigment-laden macrophages and presence of pigment in the background (Fig 4). It was reported as metastatic tumor with necrosis. A radical neck dissection of the right side was performed and the specimen showed a large cystic tumor mass $8 \times 6.5 \times 4$ cm. The rest of the lymph nodes were free of tumor. It was planned to put the patient on chemotherapy; however, the patient was lost to subsequent follow-up.

**DISCUSSION**

Mucosal melanomas in the head and neck region account for half of all mucosal melanomas, occurring mainly in the upper respiratory tract, oral cavity and the pharynx. Besides the head and neck region, mucosal melanomas arise from the mucosal membranes of the female genital organs or the anorectal region and urinary tract. A few authors have reported a slight male predominance. They are more common in the elderly; however, the indexed case was relatively young.

Derived from the neural crest, melanocytes contain melanin pigment and are found in the basal layer of the epidermis, in the mucous membrane and in the eyes. In oral mucosa, melanocytes are located along the tips and peripheries of the rete pegs. In physiological states, the melanocytes in mucous membranes do not produce melanin. However, they produce it under pathological conditions, such as in Addison's disease, neoplasms, etc. Unlike its cutaneous counterpart, exposure to sunlight is not an etiologic factor, although irritants and carcinogenic compounds (e.g. tobacco smoke) have been implicated in its development.

The most prevalent clinical presentation of malignant melanoma within the oral cavity is a painless mass, with or without ulceration and bleeding. Clinical differential diagnoses include Kaposi’s sarcoma, nevi and giant cell epulis. Prompt biopsy and histopathological examination of

**Fig. 1:** Photomicrograph shows a polypoidal growth composed of sheets of oval to spindle tumor cells, displaying moderate pleomorphism and frequent mitosis. Some of the tumor cells showed fine intracytoplasmic brown-black pigments ($\times 100$, H&E)

**Fig. 2:** Photomicrograph shows cytoplasmic positivity of the tumor cells by immunostain HMB-45 ($\times 100$, HMB-45)

**Fig. 3:** Excised specimen of right maxillectomy showing brown-black tumor in the region of upper anterior gingiva

**Fig. 4:** The smears from FNAC right submandibular mass show scattered pigment-laden macrophages with degenerated cells along with necrosis in the background ($\times 200$, H&E)
the lesion are confirmatory. Determining whether a mucosal melanoma is a primary or metastatic lesion is important because cutaneous melanoma may metastasize to the mucous membranes.10 Such patients often have a history of cutaneous or ocular melanoma or nevi that have regressed.

No universally accepted staging system for mucosal melanoma exists. The prognostic value of various levels of invasion, as established in the Clark classification, does not apply to mucosal melanoma.6

Gross appearance of the tumor is often variable, ranging from macular to ulcerated and nodular. Clinical color of oral melanomas varies from black, gray, purple and red to white. Grossly noticeable pigmentation occurs in approximately 75% of cases.9 Mucosal melanosis has been reported to be frequently encountered adjacent to oral melanoma.

Microscopically, two histologic patterns are described: an in situ pattern in which the neoplasm is limited to the epithelium and the epithelial-connective tissue interface, and an invasive pattern in which the neoplasm is found within the supporting connective tissue. A combined pattern is usually present in advanced lesions.7,10 In contrast to cutaneous melanoma, the mucosal melanomas usually have a more frequent and aggressive vertical growth phase. Different cell types, like spindled, plasmacytoid, and epithelioid tumor cells arranged in a sheet-like, organoid/alveolar, neurotropic, or desmoplastic configuration may be observed.7,10 These tumors react strongly with S-100 and more specifically to HMB-45 but not with anti-cytokeratin or anti-leukocytic antigen antibodies.11

The treatment of choice for mucosal melanoma is complete excision with adequate negative margins. Therapeutic neck dissection is indicated for lymph node metastasis in the neck. Elective lymph node dissection in local disease is not recommended because of the low frequency of development of lymph node metastasis. The role of radiotherapy in the treatment of mucosal melanoma is not clearly defined since malignant melanoma has been regarded relatively insensitive to radiation.3,6 Radiotherapy is usually applied as an adjuvant modality reserved for positive surgical margins, local recurrence, or palliation.3,4

The prognosis for mucosal melanoma is generally quite poor because of its tendency to invade and cause early hematogenous metastasis, with a 3-year mortality rate higher than 50% and a median survival time of 25 months.1,2 Negative surgical margins and the size of the primary lesion do not appear to be predictive of outcome. Gingival melanoma has a slightly greater 5-year survival rate (18%) than that of palatal melanoma (11%), with a longer median survival time (46 months vs 22 months).11,12 The presence of sarcomatoid and pseudopapillary architecture and undifferentiated cells are also associated with significantly poor disease-specific survival. Nodal involvement reduces survival time, and multiple local recurrences are the most common causes of treatment failure.10

REFERENCES