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CASE REPORT

Role of fine-needle aspiration biopsy in the diagnosis of metastatic desmoplastic melanoma to the parotid and submandibular region

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KEYWORDS

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Summary Melanomas are malignant tumors prone to develop in regional and distant metastatic foci. Desmoplastic melanoma is an uncommon melanoma variant that commonly affects the head and neck and can promote early regional metastasis through both lymphatic and neural routes. We report an uncommon case of metastatic desmoplastic melanoma from the scalp to submandibular and parotid lymph nodes in a 79-year-old male, diagnosed through fine-needle aspiration biopsy. This report reinforces the importance of considering melanoma metastasis on the differential diagnosis of asymptomatic salivary gland swellings and the utility of fine needle aspiration biopsy in their early diagnosis.

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Introduction

Melanomas are malignant tumors frequently located on the head and neck region and prone to develop metastatic foci.¹

Head and neck melanomas determine metastasis to regional lymph nodes, including cervical and parotid lymph nodes, which can be diagnosed through fine-needle aspiration biopsy (FNAB).² Prognosis of melanoma depends upon spreading of the disease, and diagnosis of metastatic melanoma directs its staging, treatment and prognosis.¹ The aim of this paper is to report a case of desmoplastic melanoma (DM) metastatic to submandibular and parotid lymph nodes, diagnosed through FNAB.

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Case report

A 79-year-old white male was referred to the Stomatology Clinic, Estácio de Sá University in May 2003 for evaluation of an asymptomatic submandibular swelling lasting three months. His medical history revealed a stroke on June 2002, hypertension and use of acetyl salicylic acid, hydrochlorothiazide and amiloride. General physical examination revealed a black macule measuring 0.5×0.5 cm on the dorsum of the left hand and another black macule on the scalp measuring 0.6×0.8 cm (Figs. 1A and B). Loco-regional physical examination revealed an asymptomatic mobile well-defined fibrous nodule measuring 3.0×2.0 cm on the right submandibular region (Fig. 1C), and intra-oral examination showed no alterations. Ultrasound and magnetic resonance imaging studies both showed two regular well-defined nodules on the submandibular region and right parotid (Fig. 1D). Our clinical diagnosis included a metastatic tumor (melanoma?) and synchronous salivary gland tumors. FNAB of the submandibular nodule was performed and revealed the presence of pleomorphic atypical cells with prominent nucleoli containing cytoplasmic pigmented granules, reinforcing the possibility of metastatic melanoma (Figs. 2A–D). The patient was referred to the National Cancer Institute, Rio de Janeiro, Brazil, and submitted to right radical neck dissection, removal of both cutaneous lesions (on the hand and scalp) and right total parotidectomy. The results showed metastatic melanoma on 7 of 25 cervical

lymph nodes removed, DM on both cutaneous lesions and metastatic melanoma to parotid lymph nodes (Figs. 3A–D). The patient died two days after the surgical intervention due to cardiac and pulmonary complications.

Discussion

Melanomas are a heterogeneous group of malignant tumors, presenting several clinical morphological and histopathological subtypes.¹ DM is an uncommon variant of melanoma, representing less than 5% of all melanomas, firstly described by Conley et al in 1971, which has a predilection for the sun-damaged head and neck skin of elderly males, presenting high rates of local recurrence.^{1,3,4} Microscopically, DM shows spindle atypical neoplastic cells arranged in fascicles, variable cellularity, stromal desmoplastic response, hyperchromatic nuclei, prominent nucleoli, and eventual absence of melanin deposits on tumoral cells.^{3,4} DM metastasis to parotid has been infrequently reported in the literature, and due to its characteristic spreading along nerve fascicles, the dissemination route of DM is supposed to occur through both neural and lymphatic routes.^{1,5,6}

Metastatic melanomas to head and neck lymph nodes pose difficulties in clinical differential diagnosis, and since neck metastasis are a significant prognostic factor for melanomas, prompt diagnosis can lead to early management.^{2,7,8} Physical dermatological inspection should be carefully performed in order to detect any suspicious lesion,

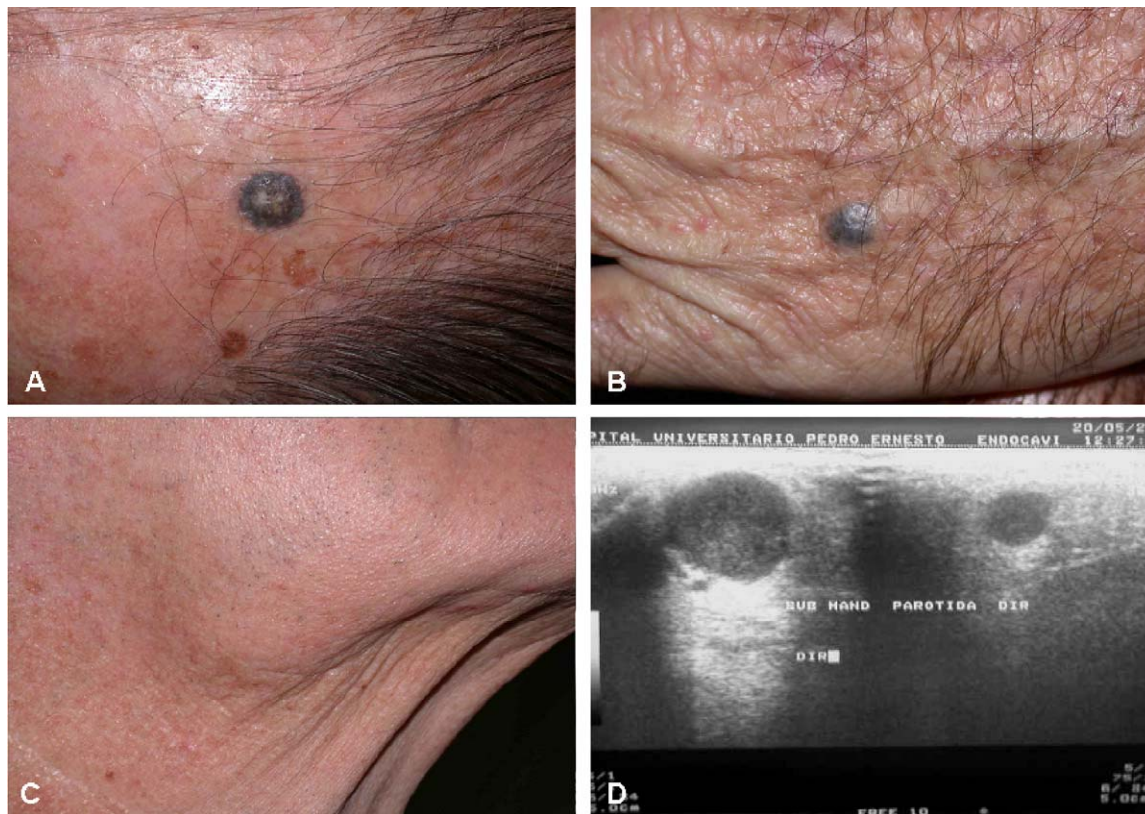


Figure 1 Black macule on the scalp (A) and dorsum of the left hand (B); submersion nodule on the right submandibular region (C); both submandibular and parotid hypoechoic nodules on ultrasound (D).

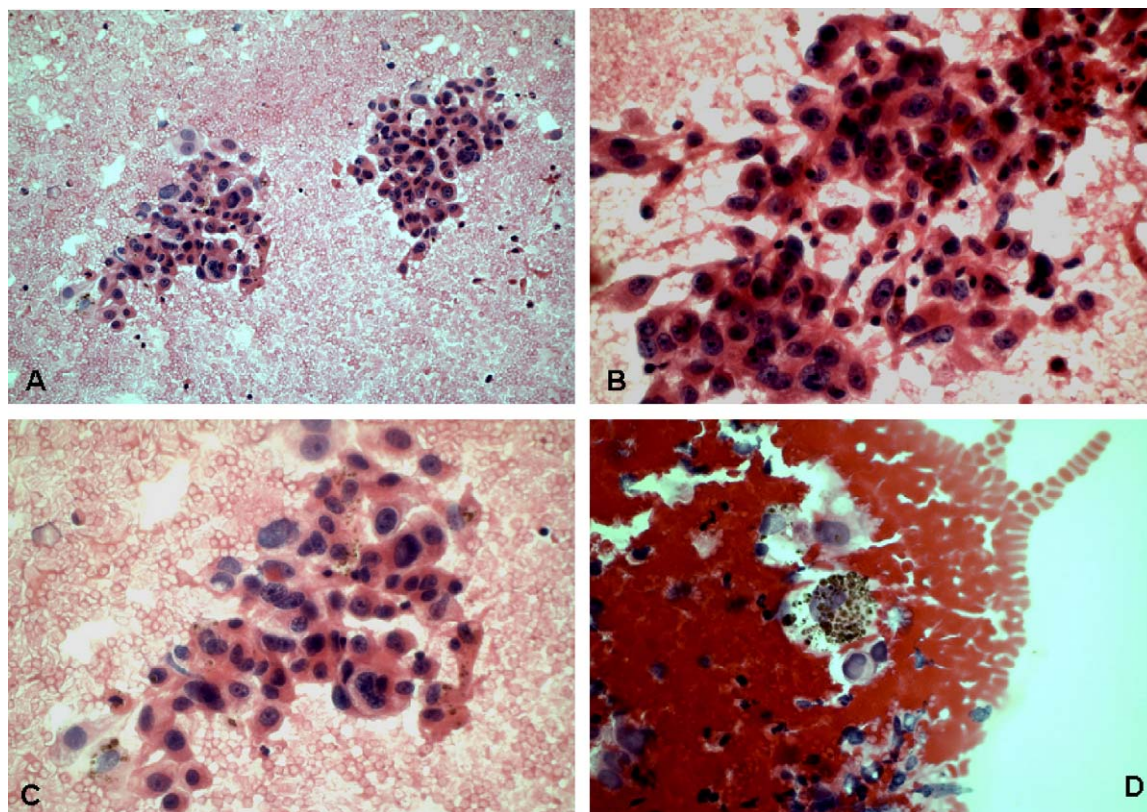


Figure 2 Fine-needle aspiration biopsy from the submandibular nodule showing atypical pleomorphic cells with hyperchromatic nuclei and prominent nucleoli (A—HE, 120 \times ; B—HE, 160 \times); pleomorphic cells presenting melanin granules on the cytoplasm (C—HE, 160 \times) and melanophages (D—HE, 120 \times).

such as the ones shown in our report, which could be interpreted as primary cutaneous melanomas.¹ Most melanomas associated to head and neck metastasis are located on the contiguous area,^{2,9,10} but sometimes the patient can present several metastasis and different possible primary lesions, as reinforced by our report. As the two metastatic foci in our patient were located on the head and neck region, and both cutaneous lesions showed similar histological features, we interpreted the scalp lesion as the primary and the other three foci as metastatic disease.

Although most metastasis from melanomas of the head and neck affect neck lymph nodes, major salivary glands, specially the parotid, are a frequent site for melanoma metastasis.^{1,2,11} In cases affecting only parotid lymph nodes or its parenchyma, differential diagnosis with salivary gland tumors is necessary, reinforcing the importance of careful clinical and imaging studies.^{2,9,10} These metastatic intraparotid melanomas are usually managed through total parotidectomy, however at the time of surgery, 35–60% of the cases also present neck disease, reinforcing the frequent complementary neck dissection in these cases.^{8,9,11} Histopathologically, when the tumor is characterized by atypical pleomorphic epithelioid or spindle cells containing melanin deposits, diagnosis is highly suggestive, but highly undifferentiated and amelanotic tumors can be a challenging diagnosis.

In addition to imaging studies through ultrasonography, computed tomography and magnetic resonance imaging, most cervical and parotid nodules have been submitted to

FNAB, a noninvasive, reliable and cost-effective diagnostic procedure.^{2,7,12} FNAB from melanomas usually reveal the presence of irregular markedly atypical dissociated epithelioid and spindle cells (the later can be present in 30% to 60% of the cases), with hyperchromatic nuclei, prominent nucleoli, multinucleation, intranuclear cytoplasmic inclusions, showing cytoplasm deposits of melanin (present in 40–92% of the tumoral cells), and show accuracy rates up to 97%.^{2,7,13–15} Several reports have focused cytological evaluation of head and neck melanomas through FNAB, reinforcing its utility in early diagnosis, and presenting false-negative results varying from 0% to 10%.^{2,7,10,12} The ability of diagnosing melanoma through FNAB is higher if the metastatic cells contain melanin, but even without melanin, cytomorphological features can lead to a suspicion of melanoma, particularly if they are analyzed with a complete history and careful clinical examination.^{2,7,10} In particular, DM can pose a diagnostic problem in FNAB due to infrequent expression of melanin or intranuclear cytoplasmic inclusions in tumor cells, and differential diagnosis with other spindle-cell lesions is advisable.^{4,6,10,13} FNAB of DM has not been frequently reported in the literature and reveals the presence of dissociated spindle cells with hyperchromatic nuclei, prominent nucleoli, and moderate atypia, as in our report.^{5,13}

Immunohistochemistry is an useful adjunctive diagnostic tool in melanomas, specially in DM and in amelanotic melanomas, but its results are not uniform in the literature. Most conventional melanoma cells express vimentin and HMB-45,

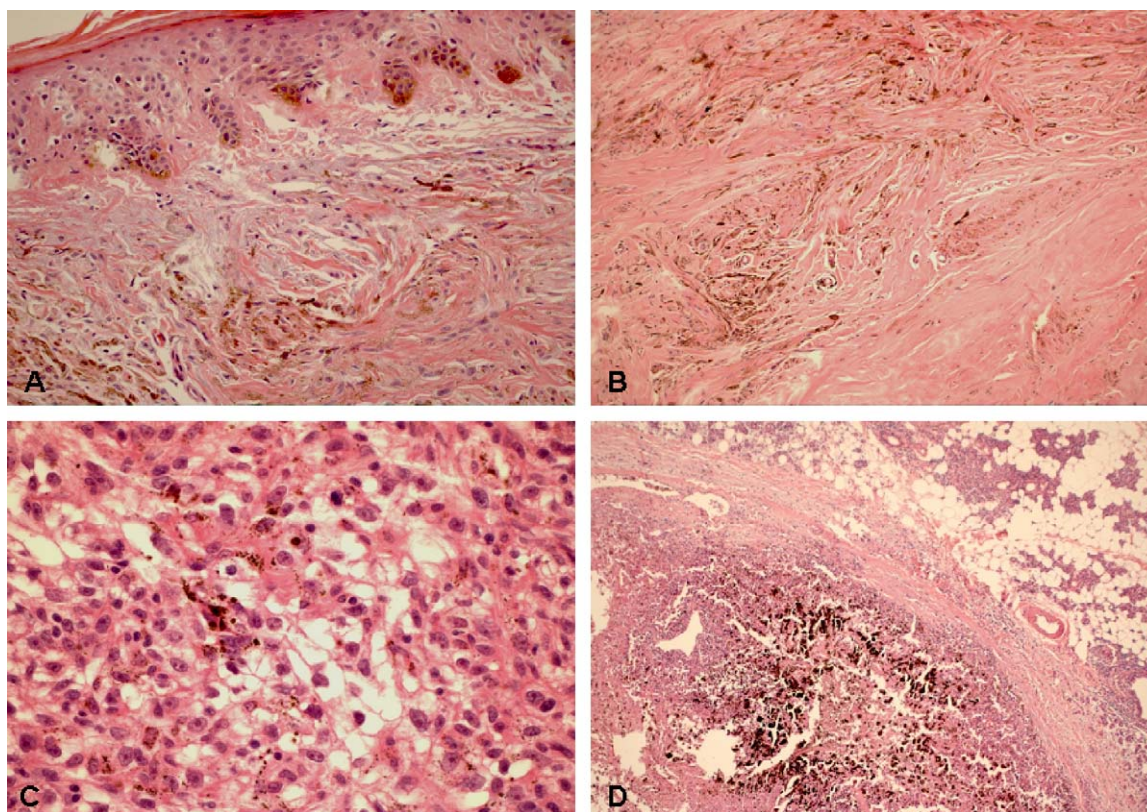


Figure 3 Cutaneous desmoplastic melanoma from the scalp showing intense desmoplasia and pigmented spindle cells (A—HE, 100 \times ; B—HE, 80 \times); metastatic melanoma to submandibular lymph node showing atypical cells with prominent nucleoli and melanin granules (C—HE, 160 \times); metastatic melanoma to the parotid showing intense melanin content and normal gland on the upper right corner (D—HE, 40 \times).

with variable expression of S-100 and absence of cytokeratin expression.¹⁶ Vimentin and S-100 immunohistochemical staining are positive in DM, but in contrast to conventional melanoma, HMB-45 is usually negative.^{5–7} Ultrastructural features, specially the presence of premelanosomes and melanosomes, can also reinforce the diagnosis of melanoma.⁷

This case reinforces the need of always considering metastatic lesions in the differential diagnosis of asymptomatic cervical and major salivary glands nodules, as well as the importance of careful clinical and imaging studies and the utility of FNAB on their diagnosis.

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