

Pigmented oral lesion in a patient with metastatic melanoma

Clinical History

A 64-year-old Caucasian man with metastatic melanoma of unknown origin was referred to the dermatology unit in a bid to detect the primary tumour. He had no family history of skin cancer or multiple nevi. Two right axillary lymph node metastatic masses had been discovered, for which an axillary lymphadenectomy had been performed. A positron emission tomography scan was suggestive of malignant nodular lesions in his right lung; biopsy of these lesions confirmed the diagnosis of metastatic melanoma.

During his complete physical examination, a pigmented oral lesion was discovered: a black asymmetric 8-mm homogenous

macule located at the right side of the tongue [Figure 1a]. It was asymptomatic and the patient had not noticed it earlier. Dermoscopy imaging showed a structureless, homogeneous, black-bluish asymmetric macule with irregular but well-demarcated borders [Figure 1b]. Biopsy revealed an interstitial accumulation of free black particles with both fibrillar and granular patterns, focally disseminated within the submucosa and surrounding blood vessels. No signs of inflammation or neoplastic processes were seen [Figure 2].

What is Your Diagnosis?

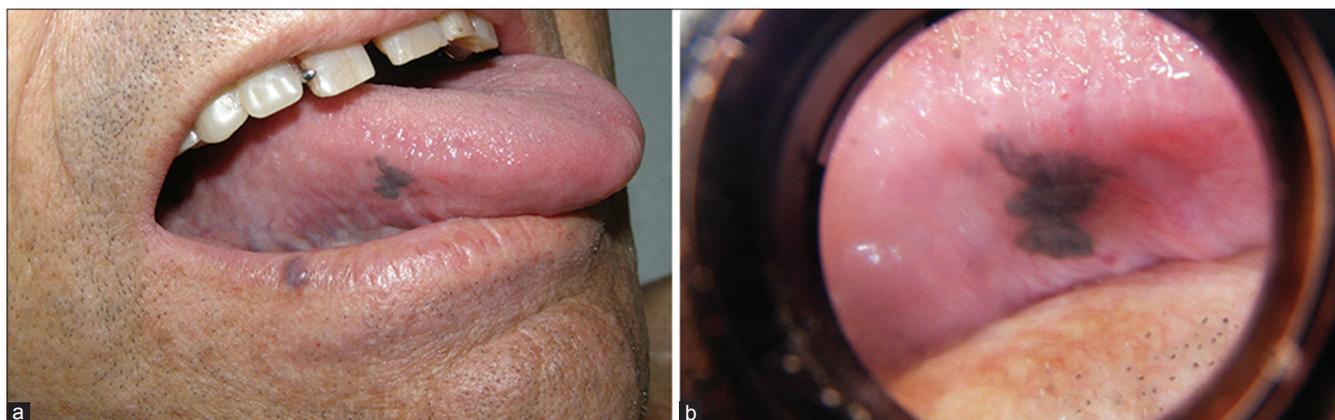


Figure 1: (a) Black asymmetric homogenous macule on the right side of tongue. (b) Dermoscopic examination showing a structureless black-bluish asymmetric macule with irregular sharp borders

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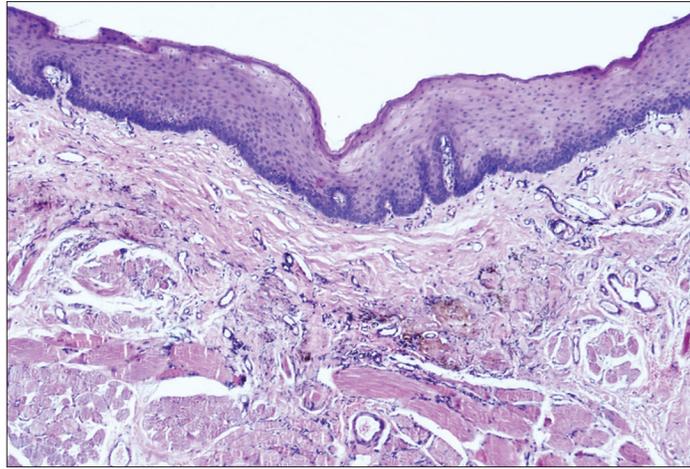


Figure 2a: Biopsy of the tongue, panoramic view (H and E, $\times 100$). An interstitial accumulation of free black particles can be seen, focally disseminated within the submucosa and surrounding blood vessels, without any signs of inflammation or a neoplastic process

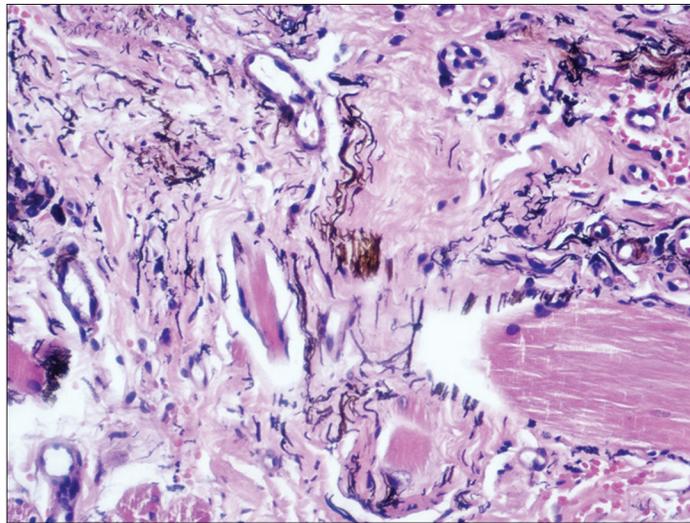


Figure 2b: Biopsy of the tongue (H and E, $\times 200$). The interstitial accumulation of free black particles shows both fibrillar and granular patterns within the dermis

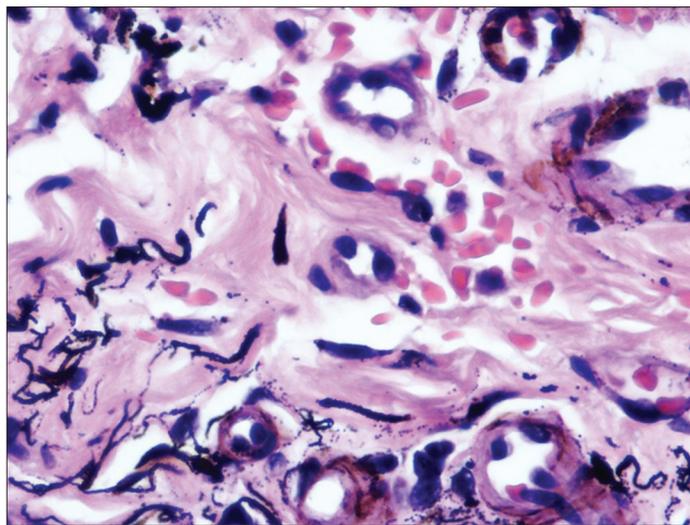


Figure 2c: Biopsy of the tongue (H and E, $\times 600$). This close-up view shows both the fibrillary and granular patterns within the dermis and around small blood vessels

Answer

Amalgam tattoo.

Discussion

The diagnostic strategy for pigmented oral lesions constitutes a clinical challenge. First, a complete clinical history should be obtained. Epidemiological data and family history of oral pigmentation or hereditary systemic diseases can be crucial to prioritize the differential diagnosis.^{1,2} Then, a thorough clinical examination of the oral cavity should be carried out with good lighting and a mouth mirror or magnifying glass.^{1,3} Dermoscopy can allow discrimination of melanocytic and non-melanocytic pigmented lesions of the mucosa, as reported by several authors.^{1,4} A complete physical examination should be performed to determine the presence of any atypical, unstable or malignant skin lesion.

A classification of pigmented oral lesions based on distribution was proposed by Kauzman *et al.*² Diffuse and bilateral asymptomatic macules can be physiological, due to Peutz–Jeghers syndrome, drugs, tobacco or post-inflammatory pigmentation. When they are associated with systemic signs and symptoms, Addison's disease, heavy metal intoxication or Kaposi sarcoma are the main differential diagnoses. On the other hand, focal macules can be differentiated by their color. Red, blue and purple lesions can be hemangiomas or varicose veins, easily differentiated by blanching on pressure. This feature is not present in thrombosis or hematoma. Blue-gray color appears in amalgam tattoo, other foreign body tattoo, blue nevus and malignant melanoma.^{1,2} Brown may indicate a melanotic macule, pigmented nevus, melanoacanthoma or malignant melanoma.

Amalgam tattoo is the most prevalent exogenous cause of oral pigmentation nowadays.^{2,5} Amalgam is one of the most commonly used dental restorative materials for dental fillings.⁵ It is an alloy of silver, mercury, tin and traces of other metals. Hypersensitivity reactions have been reported and its use has been prohibited in several countries.⁵ It is considered a class II product by the Food and Drug Administration and the American Dental Association.

Amalgam metals may inadvertently be implanted into the oral mucosa during dental restorations but they can also diffuse through the teeth.^{4,5} This causes black, blue, or gray irregular macules. These are non-inflammatory and asymptomatic, 0.1–0.5 cm in diameter and can be multiple (in 5–6% of cases).^{3,5} The gingiva, alveolar and buccal mucosae are the most commonly affected locations. The mandibular region is more frequently affected than the maxillary region.^{2,3} Less commonly, they can occur on the floor of the mouth, palate and tongue.

Clinically, amalgam tattoos often mimic malignant tumors. Oral melanomas are usually dark brown, black, or blue-gray macules or plaques with irregular pigmentation and asymmetrical borders.^{1,3} They are generally superficial or lentiginous, although they can be nodular. Furthermore, several cases of amelanotic lesions have been reported.^{1,2} Dermoscopically, mucosal melanoma generally presents a multi-component pattern with heterogeneity of color and melanocytic structures as well as irregular, abrupt, cut-off borders.^{1,4}

Ulceration, regression structures and a blue-whitish veil may be present in advanced melanomas.^{1,4} On the contrary, amalgam tattoos show a homogenous, slightly grainy, black-bluish pattern and well-demarcated borders, as seen in our patient.^{3,4}

X-rays can be diagnostic. However, fewer than 25% of amalgam tattoos are radio-opaque on plain radiography because the metal particles are very small or too widely dispersed.^{2,5}

Finally, histopathological evaluation of the lesion is usually required for a definitive diagnosis.^{1,2} Two types of histologic lesions have been described, often coexisting: irregular coarse fragments of metals or numerous fine brown or black granules dispersed between collagen bundles and around dermal vessels and nerves.^{1,4} A small proportion of cases with histiocytic or chronic inflammatory reactions have been reported, but this was not found in our case.¹

In conclusion, we report a case of amalgam tattoo mimicking a mucosal melanoma. A comprehensive history, complete physical examination and X-rays are the main diagnostic tools. Excision and histopathological study of pigmented oral lesions should be performed to exclude malignancy in doubtful cases.

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Conflicts of interest

There are no conflicts of interest.

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