Schwannoma of the oral cavity. Histological and immunohistochemical features

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Abstract
Schwannoma is a relatively uncommon, slowly growing lesion that is most commonly encountered in the nerve sheath. The mobile portion of the tongue is the most common site, followed by the palate, floor of mouth, buccal mucosa, lips, and jaws. The present case report refers a 13-year-old boy with a tongue mass that did not interfere with the speech. The histopathology and immunohistochemistry study of the excised lesion showed a Schwannoma of the tongue.

Key Words: neurilemoma, schwannoma, oral cavity, tongue, immunohistochemistry

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**Introduction**

Schwannoma has been defined as a benign, encapsulated neoplasm that arises in the nerve fiber. This neoplasm is composed primarily of Schwann cells in a poorly collagenized stroma. The etiology is unknown, but it is postulated that the lesion arises by the proliferation of Schwann cells at one point inside the perineurium. The growth of this lesion will cause the displacement and compression of the surrounding normal nerve tissue.

The tumor may arise at any age. Some series have reported that the schwannoma is more common in adults, in contrast to the neurofibroma which tends to be more frequent in young children. Most reports suggest that the majority of tumors are present between the ages of 10 and 40 years. Some series report a higher incidence of Schwannoma in the female population, while others show a slight male predominance. Clinically, the tumor appears as a smooth-surfaced, usually painless, soft-tissue swelling with intact overlying epithelium. There have been approximately 146 schwannomas reported from the oral soft tissues.

The schwannoma is usually a solitary lesion. When multiple, however, they are associated with neurofibromatosis. The differentiation between schwannoma from neurofibroma is essential, because an apparently “solitary” neurofibroma may be a manifestation of neurofibromatosis. Fifteen to sixteen percent of patients with neurofibromatosis will present malignant transformation in one or more lesions, contrary to schwannoma. Histologically, the schwannoma is encapsulated and consists of varying quantities of two types of tissues-Antoni A and Antoni B. The treatment for schwannoma is surgical excision. Recurrence after excision of schwannoma is rare. Malignant change has been reported, however this is an extremely rare phenomenon.

**Clinical Case**

A 13-year-old boy was admitted to the Maxillofacial Surgery Service of the Campinas State University, São Paulo, Brazil, for treatment of a swelling on the tongue. The patient’s mother stated the presence of painless, slow growing lesion for the past few years. No problems with speeching or swallowing were reported. The lesion was found during a routine dental examination.

Oral examination revealed a yellowish, well circumscribed mass on the vertex of the tongue, approximately 1.4cm x 0.6cm x 0.6cm in size. The was no tender to palpation and there was no evidence of paresthesia or ulceration (Figure 1). Macroscopically, the lesion was grossly similar to a lipoma. The patient was otherwise healthy without significant past medical history. The mass was excised under local anesthesia without complication (Figure 2). Microscopically, the schwannoma was uncapsulated and consisted of typical Antoni A zones admixed with Antoni B zones. Antoni A tissue was predominant in the present case (Figure 3). Immunohistochemical studies were positive for S-100 protein (policlonal; 1:2000 dilution; none antigen retrieval; Dako; Denmark) mainly in Antoni A areas (Figure 4). The viment antibody (V9; 1:6000 dilution; heat induced epitope retrieval; Dako; Denmark) was diffusely positive (Figure 5), and the anti-CD57(LEU-7; Dako; Denmark) was found to be negative. After 12 months of follow-up, no recurrence has been detected (Figure 6).

**Fig. 1** - Mass on the tongue’s vertex, well circumscribe, light yellow, and no ulceration.

**Fig. 2** - Surgical excision under local anesthesia.

**Fig. 3** - View of typical Antoni A zone that is characterized by paling of the spindle-shaped schwannoma cells. (Hematoxylin and eosin stain. Original magnification, x200).
Fig. 4 - Note the immunohistochemical positivity for S-100 protein in the schwannoma. (Original magnification, x400).

Fig. 5 - Diffuse positive immunohistochemical staining for vimentin in the schwannoma. (Original magnification, x400).

Fig. 6 - Clinical view of the tongue, after one year of follow-up.

Discussion

Schwannoma is a benign tumor, apparently derived from the Schwann cells, which may arise from any myelinated nerve fiber\(^6\). The tumor is composed primarily of schwann cells in a poorly collagenized stroma\(^1\). This lesion is not common in the oral cavity. The schwannoma is usually a solitary lesion, but can be multiple lesions when associated with neurofibromatosis\(^1\).

Wright and Jackson\(^1\), reported 146 cases of schwannoma of the oral cavity soft tissue. Of those, 52% occurred in the tongue, 19.86% in the buccal or vestibular mucosa, 8.9% in the soft palate, and the remainder 19.24% were in the gingivae and lip.

Schwannomas of the hypoglossal nerve are rare tumors. These tumors are seldomly found in the sublingual space. When present, usually involves the most peripheral segment of the hypoglossal nerve\(^6\).

Histologically, schwannomas are described as Antoni A type or Antoni B. Antoni type A present a parallel arrangement of fibrocyte-like cells, and Verocay bodies. Antoni B, is less cellular and shows microvacuolation of the intercellular substance. Flickinger et al.\(^8\), reported that in most tumors both cell types are present as reported in the present case.

Chrysomali et al.\(^3\), reported that schwannomas consistently showed positive staining for S-100 protein in most of the tumor cells. The staining intensity was greater in cells in the Antoni A tissue compared with that seen in the Antoni B tissue similarly to our case. On the other hand the immunoreactivity for CD57 antibody was negative in our report. Chrysomoli et al.\(^9\), showed CD57-positive cells 0.1% to 10% in schwannomas and neurofibromas.

Ancient schwannoma, a variant of schwannoma, was first described in the thorax by Ackerman and Taylor, in 1951\(^1\). This lesion contain both Antoni A and Antoni B pattern, with pleomorphic nuclei, some of which may be hyperchromatic. Area of hemorrhage hemossiderin accumulation as well as mitotic figures may be seen\(^1\).

Redman et al.\(^10\), reported a case of cellular schwannoma of the mandible. This tumor differs from classic schwannoma, by its increased cellularity, nuclear pleomorphism and hyperchromatism, lack of Verocay bodies, and frequently higher mitotic activity\(^10\).

Lipomas, hemangiomias, eosinophilic granuloma, epidermoid and dermoid cysts, epithelial hyperplasia, granular cell tumor, leiomyoma, lymphangioma, are some of the lesions included in the differential diagnosis of schwannoma\(^1\). López and Ballestin\(^11\), reported that the histological pattern of schwannoma is easily recognizable. The management of schwannoma requers complete surgical excision of the lesion. Schwannoma rarely recidive and not respond to radiation therapy\(^1,12\).

The conclusion is that the benign Schwannoma represent a pathology which are often not taken into account during clinical pratice. Differential diagnosis must be made in relation to numerous benign neofomrations basead on epitelial and connective tissue and, malignant tumors. Immunohistochemical features can be useful in determing neural differentiation. Anti-S-100 protein is probably the single best antibody for this case. Treatment of the Schwannoma is complete surgical excision.
References