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Case Report

Schwannoma of the Tongue: A Case Report

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Abstract.
Schwannomas (SW) are typically small, solitary, nonaggressive lesions involving peripheral, spinal or cranial nerve. In the oral cavity, the tongue SW amounts to about 1% of total SW cases. In the present case report, we discussed a case of SW of the lateral side of the tongue and its management. A 25-year-old male presented to the outpatient department with a gradually enlarging, asymptomatic mass located on the left side of the anterior aspect of the tongue, persisting for one month. On oral examination, a nodule of about 3 cm in size, elastic, tender, smooth, placed on the left lateral side of the tongue was seen, covered by mucosa. The magnetic resonance imaging report indicated a clearly defined mass encapsulated within the thickness of the left tongue, with minor involvement on the right lateral aspect of the tongue. After receiving his consent, the patient underwent a complete trans-oral surgical excision under general anesthesia without incident. The excised mass was sent for a histopathological assessment, which diagnosed the lesion as a SW. To conclude, SWs of the oral cavity are quite rare and mostly occur on the tongue. Only radiological and histological tests can confirm a diagnosis.

Keywords: Neurinoma; Neurilemmoma; Schwannoma; Tongue

1. Introduction

In adults, Schwannomas (SW), or neurilemomas, represent the most prevalent form of peripheral nerve tumor, accounting for 5% of benign soft tissue tumors in individuals aged 20 to 50, with no gender predilection.[1] They are typically small (less than 5cm), solitary, nonaggressive lesions involving peripheral, spinal, or cranial nerves that are discovered inadvertently, although they can also appear arbitrarily in the posterior mediastinum or retroperitoneum. The presence of tongue SW is linked to the hypoglossal nerve; these tumors grow slowly and can lead to pain, taste

loss, and motor function issues.[2] The clinical presentation of SWs is typically asymptomatic, slowly growing tumors that rarely present as lesions.[3] While benign SW is usually seen, 5-6% of malignant soft tissue tumors are malignant SW.[4] Approximately 25-45% of SWs can be observed in the oral cavity, nasal cavity, nasopharynx, paranasal sinuses in the head and neck region with the eye orbit and larynx being the least prevalent sites The tongue is the primary site of SWs in the oral cavity, which account for up to 1% of cases. However, the palate, gums, lips, and oral mucosa are also documented sites[5]. In the preponderance of cases, SWs are treated using surgical resection. Recurrence and malignancy are scarcely seen.[6] In the present case report, the management of a rare case of SW of the lateral side of the tongue has been discussed.

2. Case description

A 25-year-old male visited the outpatient clinic with a gradually enlarging, asymptomatic mass on the left anterior region of the tongue, persisting for one month. He complained of difficulty in speaking, chewing, and swallowing. Additionally, he complained of slight bleeding from gums while brushing his teeth. The site had no history of trauma. No history of pain, fever, drooling, dysphasia, or differences in taste was reported. The patient had no adverse habits, and his personal or familial medical history was non-contributory. On oral examination, a nodule of about 3 cm in size, elastic, tender, and smooth, placed on the left lateral side of the tongue, was seen, covered by mucosa. No atrophy or fasciculation on the tongue was seen. The lymph nodes were nonpalpable. No symptoms of abscess or ulcer were observed in the patient's oral cavity. The patient was sent for radiological investigations. The magnetic resonance imaging report of the patient revealed a well-defined mass contained inside the thickness of the left tongue, with minor complications affecting the right lateral part of the tongue. The dimensions recorded for the mass were 31mm by 36mm by 33mm, and the study focused on the genioglossus and geniohyoid muscles. A benign mass such as SW, leiomyoma, or neurofibroma was suspected, with no indication that the mass had invaded the tissues surrounding it.

After discussion of treatment options with the patient and receiving his consent, an ultrasonic scaling was performed, followed by a complete trans-oral surgical excision under general anesthesia without incident. The patient was advised of a liquid diet and discharged the next day after giving postoperative instructions and called for a one-week follow up, which showed healthy borders and healing of the lesion. The excised mass was sent for a histopathological assessment, which diagnosed the lesion as a SW (Figure 1). The biopsy revealed densely packed hypercellular Antoni A regions and myxoid hypocellular Antoni B sections. Tumor cells exhibited a thin, extended, and undulating shape with narrowing ends intertwined with collagen fibers. Cellular regions showed nuclear palisading around fibrillary processes, especially Verocay bodies. The tumor cells had indistinct cytoplasm as well as dense chromatin. No abnormal mitotic features or necrosis were detected. The biopsy revealed no evidence of cancer.

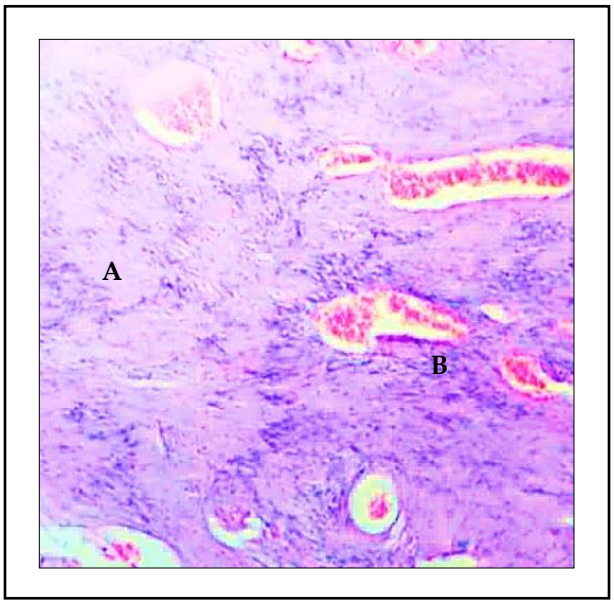

Figure 1. Schwannoma showing compact hypercellular (Antoni A) and Myxoid hypocellular (Antoni B) areas. Narrow, elongated, and wavy tumor cells with tapered ends interspersed with collagen fibers were seen.

3. Discussion

SWs are benign, encapsulated, slow-growing tumors originating from the Schwann cells of the nerve sheath, explained first in 1910 by Jose Juan Verocay[1]. For the oral cavity, two types of SW are described: the encapsulated and non-encapsulated type. The majority of instances of SW are sporadic, but it is often linked to neurofibromatosis type II (NF2) in certain individuals, which is typically associated with pain.[7] Our case reported no pain, only discomfort in swallowing and speaking, as the legion involved the tip of the tongue. This rare tumor is rarely suspected in the oral cavity, making preoperative diagnosis challenging.

Schwann cells (SC) are neural crest-derived glial cells that dispense myelin insulation to peripheral nervous system axons.[8] According to our pathology report, the lesion was comprised of hyperplastic stratified squamous epithelium with an underlying dense mixed inflammatory infiltrate of neutrophils, eosinophils, and lymphocytes. The biopsy revealed compact hypercellular Antoni A and myxoid hypocellular Antoni B regions, combined with the presence of Verocay bodies, which further substantiated the diagnosis of SW.

Although the majority of these cases are sporadic, hereditary diseases such as type 2 neurofibromatosis, schwannomatosis, and Carney complex can also be implicated.[9] SWs are spontaneous tumors of the nerve sheath produced from Schwann cells and have been linked to genetic tumor syndromes like NF2. Recent developments in medical research, however, indicate that a pathogenesis of SW tumors that are solely focused on SCs might be inadequate, considering the function of the other cell types involved.[10] SWs, according to one theory, are chronic lesions of the peripheral nerves. The majority of SCs are quiescent in non-injured nerves at rest, but rapidly

dedifferentiate and initiate proliferation following nerve injury.[11] Several studies have documented a severe deficiency in nerve regeneration in NF2-deficient mouse models. The inability of SCs to redifferentiate appears to be a major contributor to this intensely reduced regeneration. The absence of SC redifferentiation leads to sustained cell proliferation and, ultimately, tumor formation.[12] SC differentiation is governed by both intrinsic programs within the SC and instructive signals to the neighboring axons, as well as the characteristics of an inflamed condition.

The clinical differential diagnosis might include other benign tumor lesions like fibromas, lipomas, neurofibromas, or tumors of salivary glands. Nonetheless, the histological differential diagnosis necessitates differentiating it from other neurological diseases, including neurofibroma and neuroma, as well as tumors of muscular or fibroblastic origin.[13] Tongue SWs can pose a substantial threat of upper airway obstruction, necessitating prompt surgical intervention. These tumors are frequently treated by surgical excision along with the affected nerve.[14,15] In our case, during the procedure, it was difficult to determine the origin of the tumor in the tongue, owing to the proximity of the lingual and glossopharyngeal nerves, posing technical challenges to achieving complete excision. However, neither paresthesia nor other neurological symptoms were reported in our case. The present case report acknowledges the lack of graphic images as a limitation of this paper.

4. Conclusions

In conclusion, SWs of the oral cavity are rare, with the tongue being a predominant site. Only radiological and histological tests can confirm a diagnosis or rule out cortical bone perforation having any intraosseous presentation. Proper, timely diagnosis requires radiological and histopathological confirmation, and surgical excision remains the gold standard for treatment. This intervention retains the origin nerve, is less invasive, and does not cause relapse since the tumor is properly encapsulated.

Abbreviations

SW	Schwannoma
NF2	Neurofibromatosis Type II
SC	Schwann Cells

Declarations:

Supplementary Materials: Not applicable.

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