Diagnostic and Therapeutic Aspects of an Intraosseous Mandibular Schwannoma: Study of a Clinical Case

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Abstract

A schwannoma or neurilemmoma is a benign neurogenic tumor arising from the Schwann cell nerve sheath. The treatment of this benign neurogenic tumor requires surgical excision. The purpose of this work was to describe the diagnostic and therapeutic aspects of a mandible intraosseous schwannoma. The patient presented with an ovoid tumefaction that was sensitive to touch. The clinical picture appeared to be marked by progressive sensory problems linked to the compression of the inferior alveolar nerve. The orthopantomograph showed a large granulocytic unilocular radiotranslucent entity deforming the mandibular cortical bone. Its shape was regular, fusiform at the level of the inferior dental canal. From clinical and radiological examinations a cystic or an odontogenic lesion could be diagnosed.

Treatment consisted of exeresis of the bone tumor followed by curettage of the granulomatous tissues. A curative antibiotherapy was administered. The histological examination confirmed the diagnosis of a benign schwannoma. In the absence of a relapse, a prosthetic rehabilitation allowed restoration of the ability to chew.

Keywords: Schwannoma; Mandible; Tumor; Exeresis

Introduction

A schwannoma or neurilemmoma is a benign tumor that develops at the expense of Schwann cells which comprise the sheath of spinal cord nerves and cranial nerves, with the exception of the optic and the afferent nerves [1-3].

It is an encapsulated tumor, peripheral to the nervous trunk, and it rarely develops into a malignant tumor [3]. Jose Verocay (in 1908) was the first to describe the microscopic properties of this tumor, referring to it as a “Neurinoma”. Based on histopathology studies, in 1935, Stout proposed the term “neurilemmoma”. Currently, the terms neurilemoma, neurinoma, perineural fibroblastoma, or tumor of the peripheral nerve sheaths are used. They are part of neurofibromatosis type II [4,5]. Approximately 25% of all schwannomas occur at the level of the head and neck, essentially on the auditory nerve trajectory [6]. In addition from 1% to 12% of cases, it presents as a benign tumor in the oral cavity, with the tongue constituting the most common place [1,7]. Schwannomas rarely occur in intraosseous oral tissues, and only 1% of the cases concern the mandible. The clinical picture is often marked by progressive sensory problems related to pressure of the inferior alveolar nerve, and also to teeth displacements. From a radiological standpoint, the lesion is characterized by a radiotranslucent picture with clear delineation, evoking a benign tumor of the jaw [8]. A schwannoma diagnosis is confirmed by histology [9]. Treatment of intraosseous schwannoma is surgical excision with periodical follow-up. In order to decrease the risk of recurrence, it is appropriated to remove the involved nerve [10].

The objective of this case report was to describe the diagnostic and therapeutic aspects of a schwannoma of the mandible.

Observation

A 45-year-old woman was referred to the Oral Surgery Clinic of the Department of Odontology at Cheikh Anta Diop University of Dakar for a left mandible tumefaction that had progressed over the past year. In terms of her general health, the patient’s symptoms were dominated by fever, asthenia, and a change in the ability to chew. The patient indicated that she had no prior history of trauma. The oral examination provided evidence of sensitive ovoid tumefaction, triggering an electrical discharge-like dysesthesia upon palpation. On top of this there was a peripheral sub-maxillary adenopathy. The covering tissues appeared normal, and the cutaneous sensitivity of the area involved was retained. The intra-oral examination provided evidence for a localized bone mass at the level of the postero-mandibular gap. This mass was indurated, non-pulsatile, and adhering to underlying tissues. It extended from the 35 to the 37, (WHO classification) while deforming the external cortical bone. The third mandibular molar at the site of the lesion was healthy and responded as expected in tests of thermal vitality. The pulpar necrosis was partial on the 35. Acute inflammatory phases were recurrent and gave rise to the possibility of a cystic lesion or a cementoma. A radiological assessment was requested to complete the clinical examination. The orthopantomograph (Figure 1) revealed at the mandible a well delinied radiotranslucent picture, surrounded by a border of osteo-condensation. In addition the picture was fusiform at the level of the inferior dental canal, harboring a radiopaque mass including a tooth root. The radiological limits of the lesion were extended from the mesial part of the premolar to the mandibular wisdom tooth. These limits remained poorly defined at the level of the apex of the second premolar. The lesion pushed back the inferior dental canal toward the basilar edge. All these clinical and radiological observations have shown the existence of a benign tumor (ameloblastoma, cementoma) or even a malignant tumor of the jaw. However, since the patient was in a good health conditions with no local visible sign of malignant tumoral pathology (bleeding, acute pain, and adenopathy), the differential diagnosis of neoplasia was dismissed.

The treatment consisted of exeresis of the entire tumor. A mucoperiostal flap by a vestibular approach allowed for enucleation of the tumor, followed by curettage of the granulomatous tissues and extraction of the two premolar teeth in relation to the tumorous lesion (Figure 2, 3). A curative antibiotherapy in the form of fusidic acid was administered immediately after the operation. No postoperative complication was observed. The surgical specimen (Figure 4) was sent to the pathology laboratory for histological diagnosis.
Anatomical pathology examination indicated benign tumor proliferation of differentiated Schwann cell bundles with nearly devoid areas of cells and pockets containing abundant cell nuclei with a pseudo palisade arrangement. The tumor infiltrated the edge of the alveolar bone, thereby ulcerating the malphigian mucosa. It resulted in the formation of a highly-granulated tissue, characterized by a pronounced hyperplasia in the neocapillaries and a moderate polymorphic inflammatory reaction (Figure 5). The histological diagnosis was that of a benign mandibular schwannoma (WHO grade I). One year later postoperative panoramic follow-up radiography, showed a complete closing up (Figure 6). The coronary destructions and apical lesions on molars (46,47) have justified their extraction and curettage as one can see in figure 7. A prosthetic rehabilitation allowed the reestablishments of the ability to chew.

**Discussion**

Intraosseous mandibular schwannoma is a neurogenic benign tumor which can develop regardless of age, gender, and ethnicity. It occurs most often between the second and the fifth decades of life, and the median age at which it appear is 30, and it is very rare among children [8,9]. It was shown that 25% of schwannomas develop in the cervico-facial region. This preferential localization at the head could be explained by the extensive migration of Schwann cells during embryogenesis [11]. Their presence in the oral cavity is however uncommon, and it represent 1 to 12% of all stomatological tumors.

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**Figure 1:** Orthopantomograph (1,2) of mandible left molar region revealing a granulocytic unifocal radiolucent lesion extending from the first premolar to the third molar.

**Figure 2:** Surgical exposure revealing bone mass.

**Figure 3:** The surgical excision.

**Figure 4:** The excision biopsy shows evidence bone tumor with its residual tooth root (A), the granulation tissue (B), and the teeth associated with the lesion (C).
Oral schwannomas affect the tongue in 50% of cases, mainly its lateral edges, and sometimes its tip. At other sites, one encounters, in decreasing order, affliction of the palate, the floor of the mouth, the vestibule, the gums, and the lips [12,15,16]. The bones are very rarely affected, and the mandible is affected more often than the maxillary. The occurrence rate of osseous intra-mandibular bone schwannomas is 1% [9,13,17,18]. Thus, Fawcett and Dahlin have reported seven cases of schwannomas out of

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**Figure 5:** Histological study of the lesion showed fibrocellular proliferation, with spindle cells containing nodulated and palisading low grade nuclei (Arrow) destroying bone (Star). Hematoxylin eosin (a,b,c) low magnification 100x, (d) magnification 250x.

**Figure 6:** Radiographic and clinical evaluation after one year.

**Figure 7:** Prosthetic rehabilitation and follow-up after 24 months.
Conclusion

Throughout the literature, cases of mandibular schwannomas remain very rare. In the present case, a definitive diagnosis was reached through use of the anatomical pathology results following an excision for a biopsy. The clinical and panoramic dental examination allowed us to narrow the diagnosis and to define the anatomical reach of the lesion, thereby facilitating treatment which consisted of a complete surgical resection. Relapses of mandibular intraosseous schwannomas are rare following complete surgery.

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