Progressively Enlarging Inferior Alveolar Nerve Canal Radiolucency - Schwannoma?: A Rare Intraosseous Lesion

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Neural tumors of oral cavity is a very rare condition and it occurs because of putative changes in the Schwann cells which surround the axonal process, perineural cells which surrounds the nerve fascicles within a nerve fiber and fibroblast cells. Intraosseous neurilemmoma or schwannoma is one such lesion presenting as a focally expanding area of radiolucency along the course of the inferior alveolar nerve canal in an otherwise asymptomatic patient. Intraosseous schwannomas are rare, accounts to 1% of benign primary bone tumors. This article presents a case with the radiographic presentation of intraosseous neurilemmoma of inferior alveolar nerve in an asymptomatic male patient; represented by focally expanding radiolucency along the course of nerve. The follow-up was maintained for 8 years and subsequent radiographs depict the benign nature of the lesion. Also, the change in subjective symptoms like development of paraesthesia and mild pain associated with the progress of lesion is documented in this case.

Keywords: Intraosseous, Neurilemmoma, Schwannoma

INTRODUCTION

Although radiolucent lesions of the mandible are common, radiolucent lesion associated with the inferior alveolar nerve canal are rare. Such radiographic presentations are suggestive of the pathology of nerve tissue origin. Neural tumors of oral cavity is a very rare condition and it occurs because of putative changes in the Schwann cells which surround the axonal process, perineural cells which surrounds the nerve fascicles within a nerve fiber and fibroblast cells. Neurilemmoma or schwannoma is one such lesion presenting as a focally expanding area of radiolucency along the course of the inferior alveolar nerve canal in an otherwise asymptomatic patient. These are slow-growing benign tumors of ectodermal origin derived from Schwann cells. Intraoral lesions are uncommon and intraosseous schwannomas are even rarer, 1% of benign primary bone tumors.¹ The exact cause of the extensive Schwann cell proliferation is unknown, although an alteration or loss of the neurofibromatosis Type-2 gene product on chromosome 22 has been implicated.²

CASE REPORT

A 36-year-old male patient reported to our clinic with a complaint of intermittent aching pain in relation to the left side of the lower jaw since a month. On clinical examination, there were multiple grossly carious teeth with possible endodontic involvement. The patient was advised an orthopantomogram for radiographic assessment. The orthopantomogram, however, revealed a focal increase in width of the inferior alveolar nerve canal in the body region, extending towards ramus of mandible on the left side. The canal outline was diffuse and irregular. It also revealed a periodontally and periapically involved carious third molar and restored second molar in same site (Figure 1). The patient did not report any associated dysesthesia or paraesthesia. The patient did not give history of any previous trauma or mandibular surgery. The patient was consulted regarding the incidental finding and possible treatment options for the same. The patient was not willing for further biopsy or other investigations. Extraction of the third molar was done so as to attend to his chief complaint. The patient was kept on follow-up. The intermittent pain ceased to exist after the extraction.
Patient later reported to the clinic after 2 years for check-up with a complaint of mild paresthesia of lower lip on the involved site. A radiograph revealed increase in size of the lesion extending toward ramus (Figure 2). The canal margins were well defined and corticated adjacent bone was normal in texture. The slow-growing nature of the lesion was clearly suggestive of a benign pathology. The patient was advised surgical nerve avulsion, pericapsular excision or enucleation and biopsy. However, patient was not willing for the surgery.

Radiograph taken on a follow-up visit after another 4 years proved the slow-growing nature of lesion (Figure 3). The entire intraosseous course of the nerve appears to be involved. The patient however, reported marked paraesthesia of lower lip on affected site with occasional mild pain. No intraoral or extraoral findings were indicative of such a lesion.

**Treatment**

The patient was advised surgical nerve avulsion, pericapsular excision or enucleation and biopsy. However, patient was not willing for the surgery. The patient was kept on follow-up with radiographic monitoring of the size and nature of lesion. The patient was explained the possibility of malignant transformation and need for extensive surgery in future.

**DISCUSSION**

By definition neurilemmoma is a benign encapsulated perineural tumor of neuroectodermal derivation that originates from Schwann cells of the neural sheath of the motor and sensory peripheral nerves. In 1910, Jose Verocay first documented the microscopic description of this tumor and offered the designation neurinoma. Later in 1935, Arthur Purdy Stout proposed the term neurilemmoma. In 1945, Schroff reported first case of intraosseous schwannoma in the mandible. There are 3 mechanisms by which schwannomas may involve bone; a tumor may arise centrally within the bone or within the nutrient canal and produce canal enlargement, or periosteal tumor may cause secondary erosion and penetration into bone. True intraosseous schwannomas are those that arise centrally within the bone. Intraosseous lesions are relatively rare. Pain and neurological symptoms are rare unless the tumor becomes large; hence, they are usually incidental findings. However, patient may complain of mild to moderate paraesthesia. Pain may occur when the lesion involves the adjacent nerves. Mandible is the most common bone affected followed by sacrum. These lesions are relatively rare in the maxilla. The inferior dental nerve is the most common nerve associated with intraosseous neurilemmoma owing to the size, location, length, and course. Malignant transformation of benign neurilemmoma has been reported in literature; however, such transformation has been rare.

The most typical presentation is that of an asymptomatic swelling of the posterior mandible. The nonspecific radiographic appearance, consisting of a well-defined unicocular radiolucency, may suggest a benign odontogenic cyst or tumor, but widening of the mandibular canal observed in intramandibular schwannoma may prompt the addition of “a neoplasm of peripheral nervous system origin” to the differential diagnosis. Ultimately, a histopathologic examination is required for a definitive diagnosis. Complete surgical enucleation with periodic follow-up examination is indicated, but recurrence is uncommon.

**CONCLUSION**

A true intraosseous neurilemmoma of the mandible is difficult to diagnose in early stages due to absence of
subjective symptoms like pain or paraesthesia. These may be evident on routine radiographic examination. Neurilemmoma is a slow-growing benign lesion with minimal possibility of reported malignant transformation. The proper pre-operative examination should be carried out with early surgical intervention. Biopsy with histopathologic examination is advisable.

REFERENCES


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