An unusual oral manifestation of type 1 neurofibromatosis: A case report and review of literature

Vandana Shekar, Vishwanath Rangdhol, John Baliah W., Sivasankari Thirunavukarasu

Department of Oral Medicine and Radiology, Indira Gandhi Institute of Dental Sciences, Pondicherry, India

Address for correspondence:
Dr. S.Vandana, Department of Oral Medicine and Radiology, Indira Gandhi Institute of Dental Sciences, Pondicherry - 607 402, India. E-mail: drvandanapavit@gmail.com

Abstract

Neurofibroma is a benign peripheral nerve sheath tumor and is the most frequent tumor of neural origin. Its presence is one of the clinical criteria for the diagnosis of neurofibromatosis type 1 (NF1; a common hereditary disease occurring in one out of every 3000 births). The diagnosis can sometimes be made at birth, while in others the diagnosis is made later in life after the appearance of additional clinical criteria. Majority of the solitary neurofibromas are sporadic, while a few are associated with NF1 syndrome. Oral hard and soft tissue are affected by the tumor; however, the tongue is the most affected site. Gingival neurofibroma is an uncommon oral manifestation of NF. Here, we report a rare case of gingival neurofibroma in NF1 patient. One of the most feared complications of NF1 is its transformation into neurofibrosarcoma, which bears a very poor prognosis. Treatment of neurofibroma is surgical resection.

Key words: Cutaneous neurofibroma, gingiva, oral neurofibroma, type 1 neurofibromatosis

INTRODUCTION

Neurofibroma is a benign peripheral nerve sheath tumor[1-5] arising from the Schwann cells and perineural fibroblasts. They may appear in patients with or without hereditary neurofibromatosis (NF). Oral involvement is noted in 3.4-92% of adults and 40% of children with NF1.[6] Seven clinical forms of NF are described [Table 1].[7]

CASE REPORT

A 28-year-old male patient reported [Figure 1] with the chief complaint of a painless swelling in the right upper back tooth region since 3 years. History revealed swelling was of insidious in onset, which increased to attain the present size. Family history revealed the patient's father [Figure 3] also had multiple swellings all over the body and face. On general examination, multiple swellings all over the trunk region and arms were observed [Figure 2]. Solitary well-defined oval shaped swelling [firm in consistency and nontender on palpation Figure 4] approximately 4 cm × 3 cm was present in the right maxillary posterior region extending from distal aspect of maxillary first premolar to mesial aspect of third molar. Radiographic screening was normal. However, multiple, discrete, sessile cutaneous masses which had started appearing since childhood were observed. Histopathological examination of incisional biopsy of the oral lesion showed spindle cells with elongated wavy nuclei. The lesional area was separated from the overlying epithelium by mature fibrous connective tissue [Figure 5].

DISCUSSION

Neurofibromatosis type 1 is due to alteration of NF1 gene, which is a tumor suppressor gene located in the

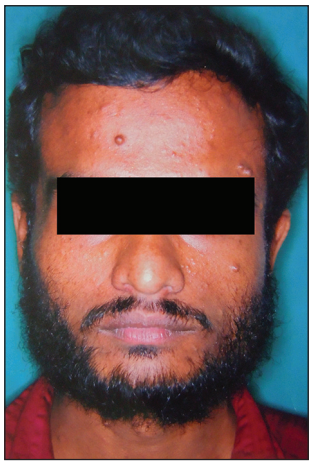

Figure 1: Patient with cutaneous neurofibroma

Table 1: Clinical forms of NF

NF category	Major features
NF1/von Recklinghausen's disease	NF1/Von Recklinghausen's disease of the skin is characterized primarily by Café au lait pigmentation of the skin, multiple neurofibromas, and a variety of other possible abnormalities including Iris Lisch nodules, CNS tumors, macrocephaly, mental deficiency, seizures, short stature and scoliosis. The presence of six or more Café au lait spots >1.5 cm in diameter is considered pathognomonic for the disease. Axillary freckling is a highly suggestive sign
NF2	NF2 is often referred to as the acoustic form of NF, because it is usually characterized by the presence of bilateral acoustic neuromas
NF3	NF3 is referred to as a mixed form of NF, because it shows features of both NF1 and NF2. Multiple CNS tumors are the hallmark of NF3 and develop in second and third decades of life
NF4	NF4 is a designation used for variant types of NF that do not fit into other well-defined categories
NF5	NF5 or segmental NF is characterized by neurofibromas and Café au lait pigmentation that are restricted to one area of the body. Café au lait spots and axillary freckling are ipsilateral to the tumors and do not cross the midline
NF6	NF6 shows primarily Café au lait spots without any associated NF or iris lisch nodules. Pectus excavatum and mental retardation may be seen
NF7	NF7 or late onset NF is characterized by initial development of neurofibromas in the third decade of life or later. No other features are seen
NF8	NF8, neurofibromas are limited to the gastrointestinal tract
NF9	NF9 has features of both NF and Noonan's syndrome

NF: Neurofibromatosis, CNS: Central nervous system

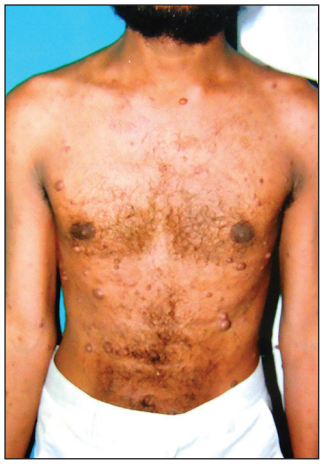

Figure 2: Cutaneous neurofibroma over the trunk

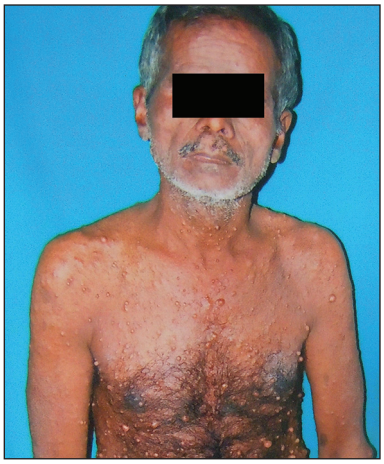

Figure 3: Patient's father with cutaneous neurofibroma

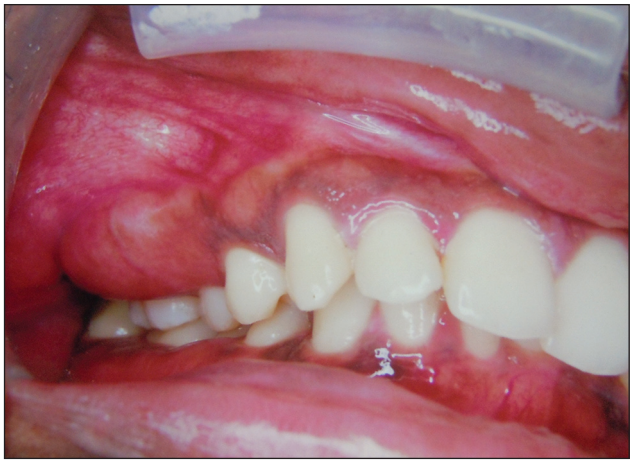

Figure 4: Gingival neurofibroma

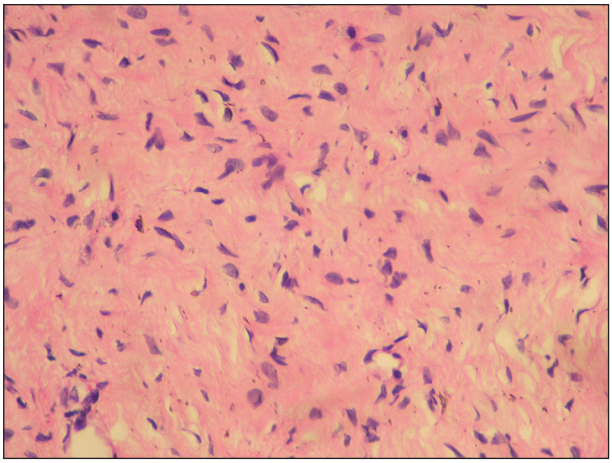

Figure 5: H and E stained section of the lesion under, ×40

long arm of chromosome 17. The clinical criterion for the diagnosis of NF1 encompasses presence of six or more Café'au lait spots (>5 mm in children or >15 mm in adults), two or more cutaneous or subcutaneous

neurofibromas or one plexiform neurofibroma, freckles in the axilla or groin optic glioma, two or more lisch nodules (pigmented hamartomas of the iris), bony lesion with sphenoid wing dysplasia or bowing of the long bones with or without pseudoarthrosis, and/or first degree relative with NF1. Our case satisfied two criterions. Other features that have been described to occur variably in individuals with NF1 include short stature, large head size, failure to gain weight, precocious puberty, vascular disease including childhood hypertension, neural problems secondary to the spinal cord involvement, headaches, cognitive problems, stroke, brain tumors, and rarely tumors such as pheochromocytoma, and juvenile chronic myeloid leukemia.

Common sites of the oral solitary neurofibromas include tongue (26%), buccal mucosa (8%), alveolar ridge (2%), labial mucosa (8%), palate (8%), gingiva (2%), nasopharynx, paranasal sinuses, larynx, floor of the mouth and salivary gland. Tumors may also arise within the bone.[8] This patient reported with gingival localization of neurofibroma, which is extremely rare and unique. Gingival neurofibromas can cause periodontal disease, as tissue growth is an obstacle in carrying out routine oral hygiene measures. They can also cause tooth malposition and impaction. Oral radiographic findings unique to NF include lengthening, narrowing and rarefaction of coronoid and articular process, deepening of sigmoid notch, an enlarged mandibular canal, mandibular foramen and mental foramen. Other findings are shortening of the ramus, notching of the inferior border of the mandible.[9] In the case reported here, no radiologic alterations were observed. Oral neurofibromas are most frequently treated by surgical excision. Usually, the prognosis for solitary neurofibroma is extremely good, with only rare instances of recurrence. The present case was kept under observation and was recalled every 3 months for a period of 1 year and showed no signs of recurrence. Malignant transformation of neurofibromas with NF1 into neurogenic sarcomas bears a very bad prognosis with a 5 years survival rate of just 15%.[10] Long-term review of patients and genetic counseling is recommended owing to the likelihood (50%) of vertical transmission.[11] NF1 is a commonly encountered neurocutaneous disorder. It is imperative for the general physicians and dermatologists to be aware of the oral manifestations of NF1 considering the risk of malignant transformation and the poor prognosis.

REFERENCES

1. Cunha KS, Barboza EP, Dias EP, Oliveira FM. Neurofibromatosis type I with periodontal manifestation. A case report and literature review. Br Dent J 2004;196:457-60.
2. Go JH. Benign peripheral nerve sheath tumor of the tongue. Yonsei Med J 2002;43:678-80.
3. García de Marcos JA, Ruiz Masera JJ, Dean Ferrer A, Alamillos Granados FJ, Zafra Camacho F, Barrios Sánchez G, *et al*. Neurilemomas de cavidad oral y cuello. Rev Esp Cir Oral Maxilofac 2004;26:384-92.
4. Gómez-Oliveira G, Fernández-Alba Luengo J, Martín-Sastre R, Patiño-Seijas B, López-Cedrún-Cembranos JL. Plexiform neurofibroma of the cheek mucosa. A case report. Med Oral 2004;9:263-7.
5. Marx RE, Stern D, editors. Oral and Maxillofacial Pathology. A Rationale for Diagnosis and Treatment. Illinois: Quintessence Publishing Co. Inc.; 2003.
6. Visnapuu V, Pienihäkkinen K, Peltonen S, Happonen RP, Peltonen J. Neurofibromatosis 1 and dental caries. Clin Oral Investig 2011;15:119-21.
7. Neurofibromatosis. NIH Consensus Statement Online. 1987;6:1-19. Neurofibromatosis. NIH Consens Statement Online 1987 Jul 13-15; [cited 2014 Mar 06];6(12):1-19. Available from: http://consensus.nih.gov/1987/1987Neurofibramatosis064html.htm
7. Sivapathasundharam B, Lavanya S, Deepalakshmi M, Saravanakumar R, Ahathya RS. Solitary neurofibroma of the gingiva. J Oral Maxillofac Pathol 2004;8:107-9.
8. Friedrich RE, Giese M, Schmelzle R, Mautner VF, Scheuer HA. Jaw malformations plus displacement and numerical aberrations of teeth in neurofibromatosis type 1: A descriptive analysis of 48 patients based on panoramic radiographs and oral findings. J Craniomaxillofac Surg 2003;31:1-9.
9. Neville BW, Damm DD, Allen CM, Bouquot JE, editors. Oral and Maxillofacial Pathology. 3rd ed. St. Louis, MO: Saunders Elsevier; 2009.
10. Ferner RE, Huson SM, Thomas N, Moss C, Willshaw H, Evans DG, *et al*. Guidelines for the diagnosis and management of individuals with neurofibromatosis 1. J Med Genet 2007;44:81-8.

How to cite this article: Shekar V, Rangdhol V, Baliah WJ, Thirunavukarasu S. An unusual oral manifestation of type 1 neurofibromatosis: A case report and review of literature. J Nat Sc Biol Med 2015;6:261-3.

Source of Support: Nil. **Conflict of Interest:** None declared.

Access this article online	
Quick Response Code:	Website: www.jnsbm.org
	DOI: 10.4103/0976-9668.149225