Case Report

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NEUROFIBROMATOSIS TYPE 1: A CASE REPORT AND LITERATURE REVIEW

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ABSTRACT:

Neurofibromatosis is the term used to describe a group of genetic disorders that primarily affect the cell growth of neural tissues. Neurofibromatosis type 1 is an autosomal dominant disorder with a worldwide birth incidence of 1 in 2500 and prevalence of at least 1 in 4000. The main clinical features of NF1 are multiple café-au-lait (CAL) spots, axillary freckling, Lisch nodules, optic pathway gliomas and peripheral nerve-sheath tumours. We present a case report of 46 year old female patient with Neurofibromatosis type 1 with periodontal manifestations.

Key Words: Neurofibromatosis, café-au-lait spots, Lisch nodules

INTRODUCTION:

In 1882 the German pathologist Friedrich Daniel von Recklinghausen for the first time described a series of patients with combination of cutaneous lesions and tumors of peripheral and central nervous system. Only in the 20th century neurofibromatosis type 1 (NF1), namely Recklinghausen's disease, and neurofibromatosis type 2 (NF2), previously referred as central neurofibromatosis, were distinguished from each other as two different autosomal dominant inherited genetic disorders with common features [1,2]. NF1 is an autosomal disorder with a worldwide birth incidence of 1 in 2500 and prevalence of at least 1 in 4000 [3]. The main clinical features of NF1 are multiple café-au-lait (CAL) spots, axillary freckling, Lisch nodules, optic pathway gliomas and peripheral nerve-sheath tumours [3, 4]. NF1

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patients are at an increased risk of developing both benign and malignant tumours, and NF1 is thus classified as a tumour predisposition syndrome. Although NF1 is determined by Mendelian inheritance with complete penetrance, it is characterised by highly variable expression and marked inter- and intrafamilial variation [5].

CASE DETAIL:

A 46 year old female patient visited the department of Oral Medicine and Radiology with a chief complaint of mobile teeth in lower anterior region since 3 months. She gave history that mobility of teeth has gradually increased since last 3 months and lead to difficulty in eating food. The history revealed exophytic nodular skin lesions. Patient noticed the skin lesions when she was of 9 years of age. Primarily these lesions developed on the fore arms which were of very small size (0.5mm) and were few in number. Gradually they increased in size as well as number. At 20 years of age when patient got married the number and size increased and since 15years they are of the same size and number. She feels uncomfortable on lying down. Medical history reveals that her menstrual cycle is irregular (once in 15days). Family history reveals similar kind of lesions in her father also.The General physical examination revealed moderate build, normal gait, 42 kgs of weight and height was of 4 ft 9 inches. Extraorally, multiple nodular lesions of varying sizes ranging from 0.5mm to 5cm in diameter were present. Few were of the same color as the surrounding skin whereas few were dark brown in color. On palpation the consistency was of variable kinds it was soft to firm to cheesy. Similar kind of lesions were present on the neck, shoulder, trunk, upper limbs, lower limbs [Figure1, 2]. On the back there was Café-Au-Lait pigmentation [Figure 2].

Intraorally, all the teeth were mobile with generalized recession. There was no nodular lesion present intraorally. Based on the history and clinical presentation of cafe au lait macule, a working diagnosis of chronic generalized periodontitis in a patient of Neurofibromatosis type-1 was given.The patient was subjected to radiographic investigations. Full mouth IOPA revealed advanced periodontitis but was devoid of any neurofibroma. MRI was chosen however no apparent mass was detected. Lateral view of skull showed open sutures [Figure 3]. Panoramic and PA

view of the skull didn't show any significant finding. In chest radiographs AP view showed mild deviation towards left side; the scoliosis [Figure 3] where as in Lateral view no kyphosis was there.

Excisional biopsy was done; lesion from the left forearm was used for histopathological investigation which composed of connective tissue showing interlacing bundles of spindle shaped cells with spindle nuclei in between cells. There was myxoid material and collagen fibres, at places there was axonal cells also suggestive of Neurofibroma.

The case was referred to the department of Oral and Maxillofacial Surgery where patient was advised sequential extractions and after three months the patient was given a complete set of denture. It was decided that the patient be kept under observation and be reviewed once in every 6 months.

DISCUSSION:

Neurofibromatosis an autosomal dominant genetic condition is the term used to describe a group of genetic disorders that primarily affect the cell growth of neural tissues. At least 8 forms of neurofibromatosis have been recognized, the most common form being neurofibromatosis type 1. This accounts for more than 90% of the cases. There is no sex predilection [6]. Only 50% of these patients have a positive family history of the disease and the remaining represent spontaneous mutations, or a deletion of the *NF1* gene [7]. The criteria for diagnosis of NF have been proposed by the National institute of health Consensus Development Conference in 1988. The diagnostic criteria for NF 1 are met if a patient has two or more of the following features:

(1) Six or more cafe-au-lait macules over 5 mm in greatest diameter in prepubertals persons and over 15 mm in greatest in post pubertal persons.

(2) Two or more neurofibromas of any type or one plexiform neurofibroma,

(3) Freckling in the axillary or inguinal regions

(4) Optic glioma

(5) Two or more Lisch nodules (Iris hamartomas)

(6) A distinctive osseous lesion such as sphenoid wing dysplasia or thinning of the

long bone cortex with or without pseudarthrosis

(7) A first-degree relative (parent, sibling, or offspring) with NF [8].

Other possible abnormalities that may be seen include central nervous system tumors, macrocephaly, mental deficiency, seizures, short stature and sclerosis. Sexual precocity is seen in 3-5% of effected children [6, 8]. The patient in discussion fulfilled two of the above criteria; she had numerous neurofibromas and the first degree relative that is her father had such lesions.

Oral manifestations may occur in as high as 72% of the cases. The most common reported finding is enlargement of fungiform papillae seen in about 50% of all the effected patients. However the specificity of these findings for NF is unknown. Only about 25% of the patients may show solitary or multiple neurofibromas. The tongue, lips, palate, buccal mucosa, gingiva and floor of the mouth are involved [8, 9]. In contrast, our case did not show any of these oral manifestations.

Radiographic manifestations of neurofibromatosis, especially in children, have been studied comprehensively. These include macrocranium, macroencephaly, cervical kyphosis, bony dysplasia, sclerosis, enlarged acoustic canal and bowing and pseudoarthrosis, especially of the tibia. Orally radiographic findings may include enlargement of the mandibular foramen, enlargement and branching of the mandibular canal, increased bone density, concavity of the medial surface of the ramus, increased dimension of the coronoid notch cyst like lesions [10]. Our case did not show any of these manifestations though scoliosis was present.

CONCLUSION:

There is no specific therapy for NF-1. The treatment is often directed towards prevention or management of complications. Facial neurofibromas can be removed for cosmetic or functional purpose. 50% of the cases of NF-1 are inherited as autosomal dominant traits; this emphasizes the role of genetic counseling for such patients. In patients with NF-1 there is propensity for the neurofibromas to undergo malignant transformation at a higher rate than that observed for comparable tumors in general population. This is especially true

for plexiform neurofibromas. The one salient feature found in all cases of NF-1 is its progressive nature. The role of cognizant clinician lies in early diagnosis of the condition and alerting the patient about its future complications. Long term follow up of such cases is mandatory. Psychological counseling along with instilling of self confidence in such patients can possibly reduce their suffering and help them improve their quality of life.

REFERENCES:

1. P. A. Gerber, A. S. Antal, N. J. Neumann, B. Homey, C. Matuschek, M. Peiper, W. Budach, E. Bölke. Neurofibromatosis. Eur J Med Res 2009;14: 102-105.
2. Ferner RE. Neurofibromatosis 1 and neurofibromatosis 2: a twenty first century perspective. Lancet Neurol 2007;6: 340-51.
3. Carey JC, Baty BJ, Johnson JP, Morrison T, Skolnick M, Kivlin J. The genetic aspects of neurofibromatosis. Ann N Y Acad Sci 1986;486: 45–56.
4. Sabbagh A, Pasmant E, Laurendeau I, Parfait B, Barbarot S, Guillot B, Combemale P, Ferkal S, Vidaud M, Aubourg P, Vidaud D, Wolkenstein P, members of the NF France Network. Unravelling the genetic basis of variable clinical expression in neurofibromatosis 1. Hum Mol Genet 2009;18: 2768–78.
5. Easton DF, Ponder MA, Huson SM, Ponder BA. An analysis of variation in expression of neurofibromatosis (NF) type 1 (NF1): evidence for modifying genes. Am J Hum Genet 1993;53: 305–13.
6. Kam JR, Helm TN. Neurofibromatosis. Available from: http://www.emedicine.com/Derm /topic. [last accessed on 2005 Dec 11]
7. Beth A Pletcher, Bruce Buehler. Genetics of Neurofibromatosis. Updated: Jul 8, 2011.
8. Cunha KS, Barboza EP, Dias EP, Oliveria FM. Neurofibromatosis type 1 with periodontal manifestation. A case report and literature review. BrDent J 2004;196: 457-60.
9. Neville BW, hann j, narang r, garen p. Oral neurofibrosarcoma associated with neurofibromatosis

type1. oral surg oral med oral pathol 1991;72: 456-61.

10. Lee L, Yan YH, Pharoah MJ. Radiographic features of the mandible in nuerofibromatosis: A report of 10 cases and review of the literature. Oral Surg Oral Med Oral Pathol Oral Radiol Oral Endod 1996;81: 361-7.

FIGURES:

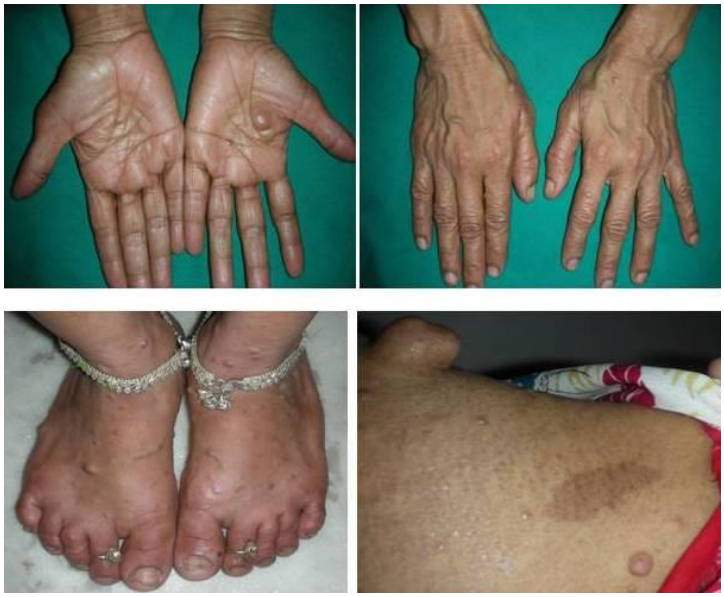

Figure 1: Multiple exophytic lesions of varying sizes ranging from 0.5mm to 5cm in diameter were present on the face, neck, back, and trunk.

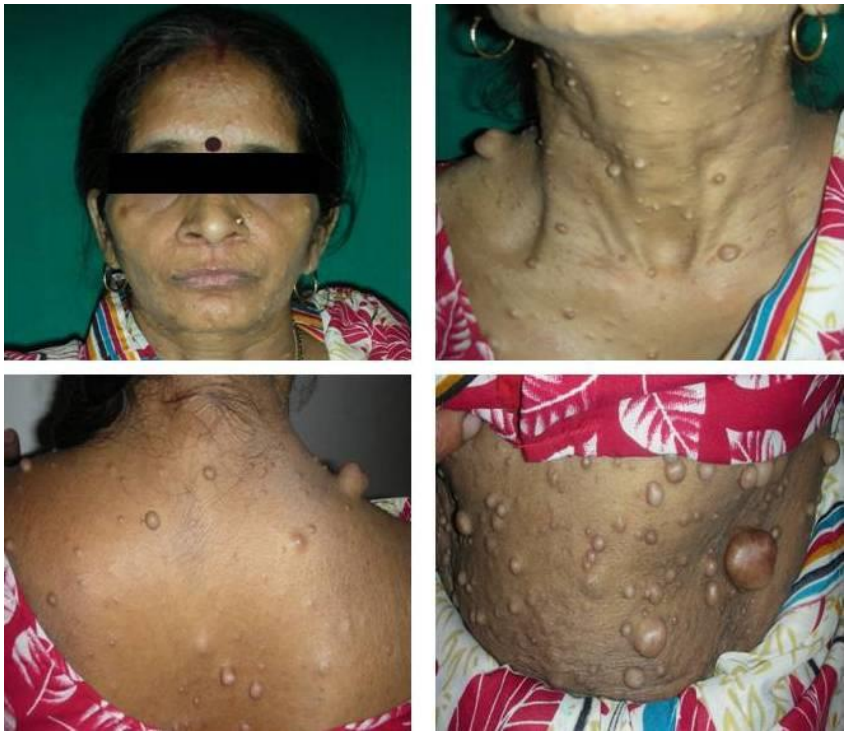

Figure 2: Multiple nodular lesions of varying sizes are present on the dorsal and ventral surface of the hands, feet. Cafe au lait macule present on the back.

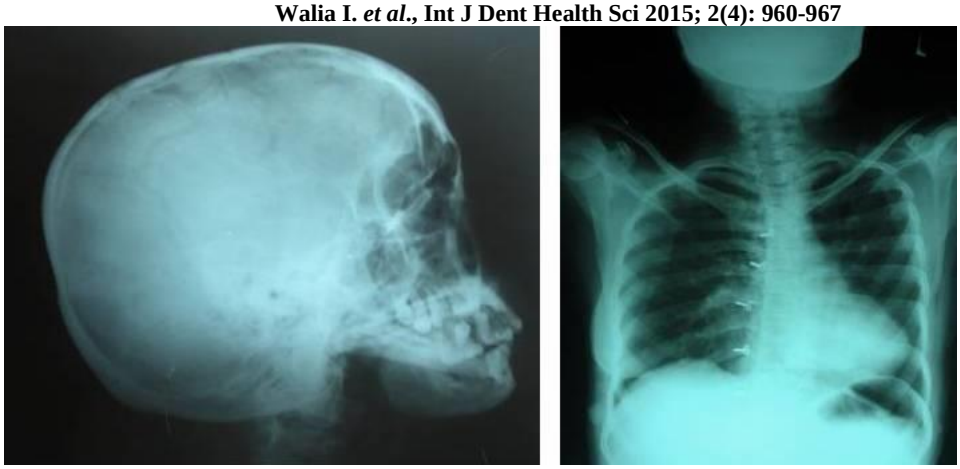

Figure 3: Lateral view of skull showing open sutures and Anteroposterior view showing mild deviation towards left side