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Central Giant Cell Granuloma in Neurofibromatosis Type I- A Case Report

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Original Research Article

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Abstract: Neurofibromatosis type 1 (NF1), described by von Recklinghausen in 1882, is one of the most common genetic diseases and has widely variable expressivity. Oral manifestations are common and can be found in a large percentage of NF1 patients. Coexistence of Central Giant Cell Granuloma (CGCG) in patients with NF1 was reported in the literature, but a genetic link between CGCG and NF1 is presently not well established. The aim of this article was to report a clinical case of NF1 associated with a CGCG lesion in the maxilla.
Keywords: Neurofibromatosis Type 1, Oral manifestations, central giant cell granuloma

INTRODUCTION

Neurofibromatosis Type 1 (NF1) is considered as one of the most common autosomal dominant diseases affecting multiple systems including the vascular, skeletal, and central nervous system [1- 4]. Oral manifestations are common and can be found in a large percentage of NF1 patients [3, 4]. All oral hard and soft tissues can be affected in neurofibromatosis [5, 6]. The presence of Central Giant Cell Granuloma (CGCG) was reported in patients with neurofibromatosis [7- 9], but can it be included among the heterogeneous signs of this disorder?

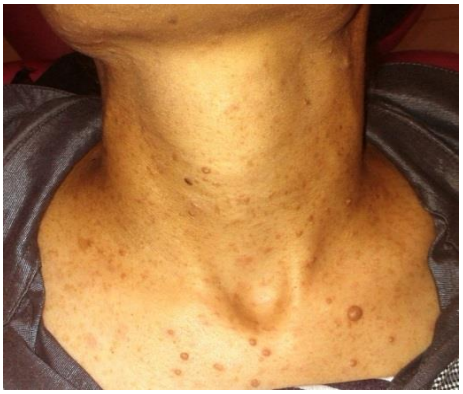
CASE REPORT

A 32 year-old woman with NF1, diagnosed in Dermatology Department, was referred by her general dental practitioner to our department of Medicine and Oral Surgery of the Dentistry Clinic of Monastir, Tunisia. The general clinical examination revealed multiple cutaneous nodules of different sizes. The nodules were dark, non tender, with no signs of inflammation (Figure 1). A few of both cutaneous and subcutaneous neurofibromas were scattered on the skin (Figure 2). Some café-au-lait spots were noted on the legs (Figure 3). Lymph nodes were not enlarged.

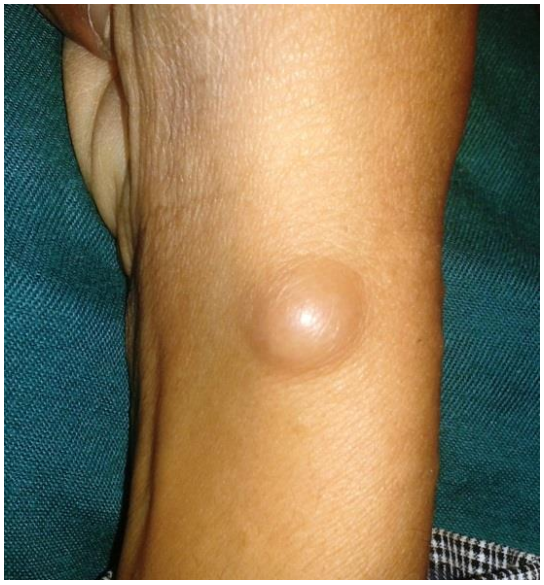
An intraoral examination showed poor hygiene, plaque and calculus accumulation, gingival inflammation and multiple cavitated caries. An inflamed lesion that extending distal of the maxillary right canine to the first right maxillary molar, its measure approximately 2 cm. A bony swelling of firm consistency overcomes mucosal lesion. The first and second left maxillary premolars were extracted (Figure 4).

Panoramic radiograph showed radiolucent bone lesion, lysis of the root of the canine mesially bordering the lesion. Several teeth have penetrating caries with periapical granulomas. Also, we note the presence of widened inferior alveolar canal with enlarged right and left mental foramina which is typical of NF1 (Figure 5). Clinical and radiographic signs may evoke central giant cell granuloma, brown tumor, giant cell tumor or giant cell epulis.

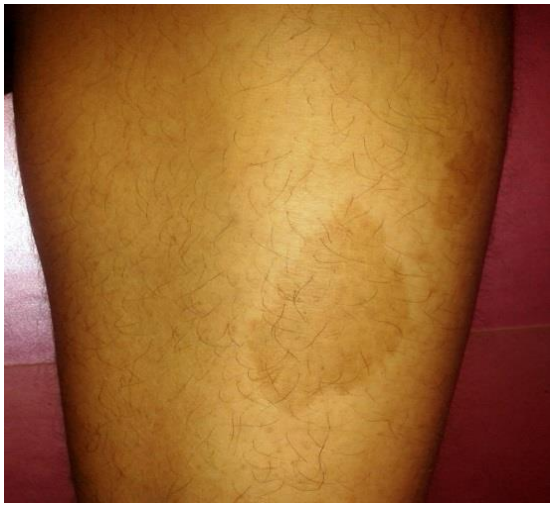
Biological examinations were requested and showed normal serum calcium, parathyroid hormone, alkaline phosphatase and phosphorus levels. Diagnosis of brown tumor of hyperparathyroidism thus been excluded. A surgical resection of the lesion associated with bone curettage was performed (Figures 6, 7, 8). The maxillary left canine bordering the lesion was extracted. The specimens were subjected to an anatomopathological examination. The results revealed a CGCG (figure 9).



Fig−1: Multiple cutaneous nodules of different sizes.



Fig−2: Subcutaneous neurofibroma



Fig−3: Café-au-lait spots on the legs

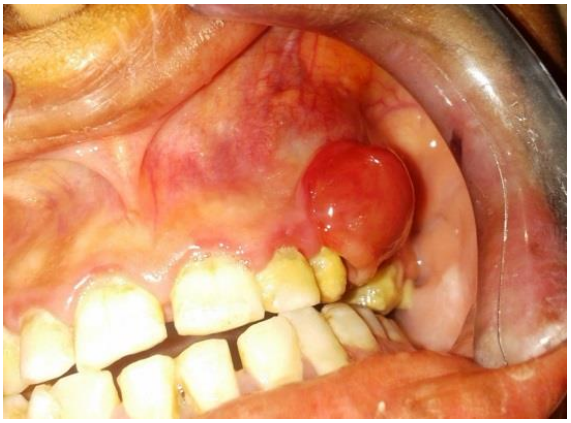


Fig-4: An inflamed lesion with distinct border surmounted by a bony swelling with firm consistency

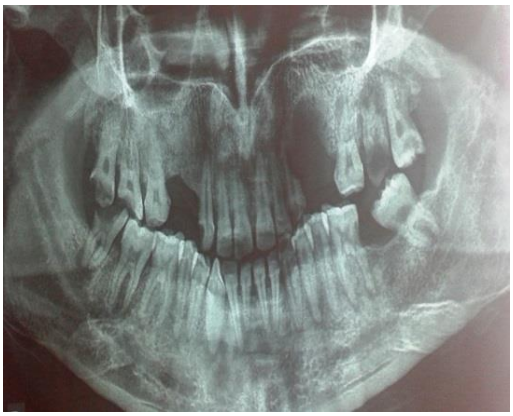


Fig-5: Circular radiolucent bone lesion, lysis of the root of the maxillary canine bordering the lesion, multiple penetrating caries with periapical granulomas. Note the presence of widened inferior alveolar canal with enlarged right and left mental foramina.

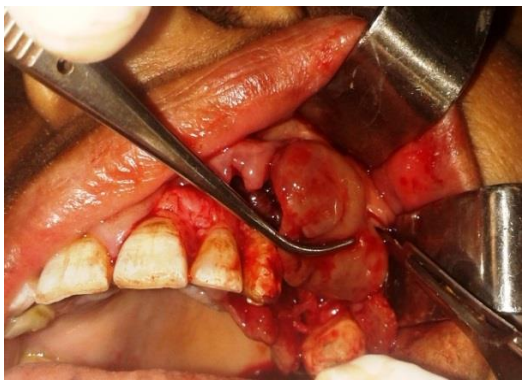
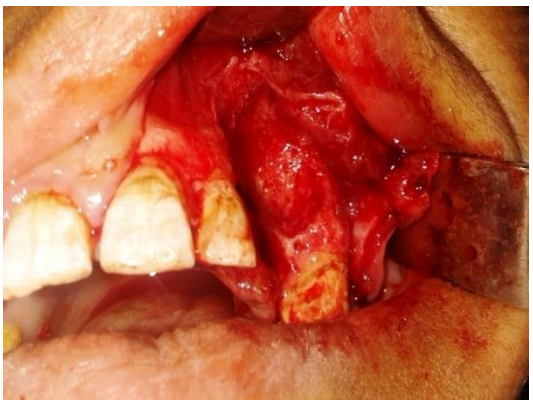
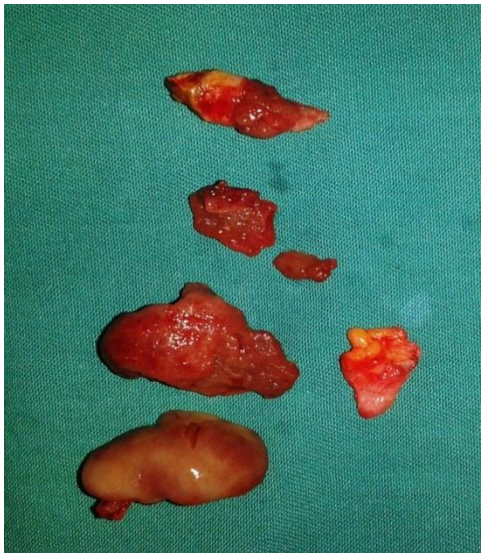


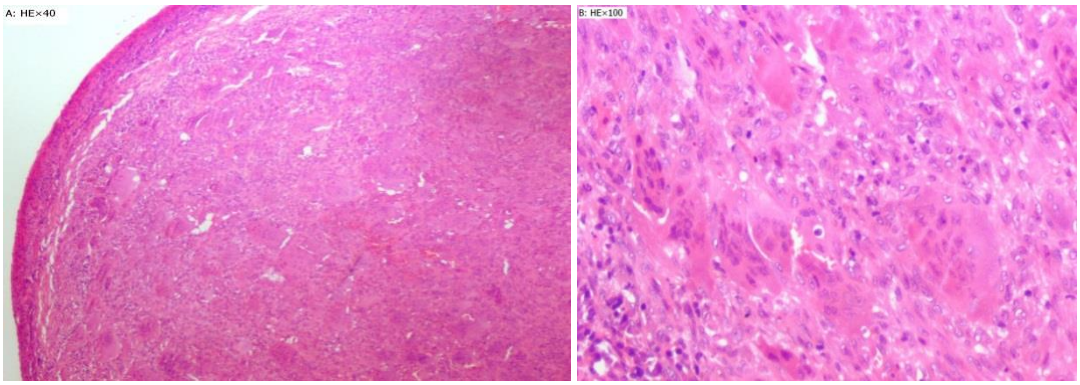
Fig-6: Surgical resection of the lesion.



Fig−7: Bone curettage



Fig−8: Specimens and extracted canine.



Fig−9: Hstopathological examination revealed numerous multinucleated giant cells.
A: H.E ×40, B: H.E ×100.

DISCUSSION

Neurofibromatosis Type 1 (NF1), also known as von Recklinghausen's disease, is considered as one of the most common autosomal dominant diseases with an incidence of 1/3000 births [3, 7, 10-13]. NF1 mostly appears in the third decade of life without any sex predilection and association with any immunocompromising diseases [4]. Deletions, insertions or a mutation affecting the NF1 gene that is located at 17q11.2 chromosome is responsible for the disease [5, 9].

It is not a single entity, but a group of heterogeneous multisystem neurocutaneous disorder involving both neuroectodermal and mesenchymal derivatives [6, 14, 15]. The hallmark lesion in NF1 is the neurofibroma, but it also expresses authors characteristical cutaneous phenotype including hyperpigmented macules (café-au-lait macules) and inguinal/axillary freckling, as well as iris hamartomas (Lisch nodules) [2, 4, 5]. Other NF1-associated clinical features include skeletal abnormalities, skeletal and orbital dysplasia, ostopenia/osteoporosis, macrocephaly, short stature, cardiovascular malformations, learning difficulties and attention deficit disorder [2]. The diagnosis of NF1 is based predominantly on the clinical criteria of cutaneous manifestations and familial history [5].

Oral manifestations are common and can be found in almost 72% of NF1 patients [13]. All oral hard and soft tissues can be affected in neurofibromatosis [6, 15]. They include discrete nodules, varying from normal mucosal color to red or even yellow. These nodular lesions usually appear in soft tissues such as the cheek, palate, tongue, floor of the mouth, and lips [4, 5]. The intraosseous expressions of NF1 are enlargement of inferior alveolar canal, widened mandibular foramen and mental foramen [5, 16]. In our case, an enlarged mandibular canal, as well as mental foramen was present. The presence of impacted, displaced or missing teeth particularly in the mandible is also a recognized oral manifestation [4].

As our case, coexistence of Central Giant Cell Granuloma (CGCG) in patients with NF1 was reported in the literature [7-9]. According to a study by Reinhard E.F *et al*. [9], a genetic alteration of the NF1 gene in a Giant Cell Granuloma (GCG) of a neurofibromatosis type 1 patient was revealed. An activation/involvement of the NF1 gene in the development of GCG is possible [9].

CGCG is a benign tumor of unknown etiology [17-19], it occurs predominantly in the jaw and facial bones, but it also appears in other parts of the body [20, 21]. The lesion affects the mandible more than the maxilla [19, 20, 22, 23], and it commonly occurs in patients in 2nd and 3rd decades of life, so that 74 % of the patients are under 30 years at the time of presentation [19]. Females are more frequently affected than males with a sex ratio of 2/1 [22-24].

It is usually an asymptomatic lesion discovered during routine radiographic examinations, or when the painless expansion of the affected bone is noted [20]. Clinically these lesions cause facial swelling, asymmetry, and expansion of cortical plates and radiologically resorption of roots of teeth with cortical perforation is well appreciated [23]. Histologically multinucleated giant cells in a cellular vascular stoma with new bone formation are detected. The osteoclast like giant cells has irregular distribution and is associated with areas of hemorrhage [19].

The differential diagnosis includes anevrysmal bone cyst, giant cell tumor and brown tumor of hyperparathyroidism [19]. Patients who present with a central giant cell lesion in the maxilla or mandible should be screened for hyperparathyroidism. Normal serum calcium, parathyroid hormone, alkaline phosphatase and phosphorus levels distinguish CGCG from other conditions like Brown tumor of hyperparathyroidism [20, 23]. Surgery is the conventional and most accepted form of treatment for CGCG [19, 20]. However, the extent of tissue removal ranges from simple curettage to en bloc resection [20, 8]

CONCLUSION

NF1 is one of the most common genetic diseases with extremely variable expressivity. Oral manifestations are very common, dentists should be aware of the characteristics of this disease. The association between neurofibromatosis and central giant cell granuloma has been reported in the literature, but a genetic link between GCG and NF1 is presently not well established.

REFERENCES

1. Gerber PA, Antal AS, Neumann NJ, Homey B, Matuschek C, Peiper M, Budach W, Bölke E. Neurofibromatosis. European journal of medical research. 2009 Mar 17;14(3):102.
2. Laycock-van Spyk S, Thomas N, Cooper DN, Upadhyaya M. Neurofibromatosis type 1-associated tumours: their somatic mutational spectrum and pathogenesis. Human genomics. 2011 Oct 1;5(6):623.
3. Cunha KS, Rozza-de-Menezes RE, Luna EB, de Sousa Almeida LM, de Andrade Pontes RR, Almeida PN, de Aguiar LV, Dias EP. High prevalence of hyposalivation in individuals with neurofibromatosis 1: a case–control study. Orphanet journal of rare diseases. 2015 Feb 28;10(1):24.
4. Arya SN, Joseph J, Leena J, Renju MK, Giju BG. Oral Manifestations of Neurofibromatosis: A Rare Case Report. IJSS Case Reports & Reviews, 2015; 2 (1): 20-23.
5. Sheejith M, Benny J, Sameera G, Bhavya S. An Unusual Case of Multiple Intraoral Manifestations of Neurofibromatosis Type 1: Case Report with Literature Review. Journal of Clinical and Diagnostic Research. 2014; 8 (12): 20-22.
6. Warhekar AM, Wanjari PV, Chaudhary A, Hada DS, Gupta R. A rare case report of neurofibromatosis I in HIV positive individual. Journal of clinical and diagnostic research: JCDR. 2015 Apr;9(4):ZD20.
7. Yazdizadeh M, Tapia JL, Baharvand M, Radfar L. A case of neurofibromatosis-Noonan syndrome with a central giant cell granuloma. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology. 2004 Sep 30;98(3):316-20.
8. Chrcanovic BR, Gomez RS, Freire-Maia B. Neurofibromatosis type 1 associated with bilateral central giant cell granuloma of the mandible. J Craniomaxillofac Surg. 2011; 39(7):538-43.
9. Friedrich RE, Mautner VF, Scheuer HA. Loss of heterozygosity in tumor cells of a recurrent mandibular giant cell granuloma in neurofibromatosis type 1. Anticancer research. 2007 Jul 1;27(4A):2079-83.
10. Bachelet JT, Combemale P, Devic C, Foray N, Jouanneau E, Breton P. Management of craniofacial type 1 neurofibromatosis. Rev Stomatol Chir Maxillofac Chir Orale. 2015; 17.
11. Cunha K.S, Rozza-de-Menezes R.E, Andrade RM, Almeida L, Janini M, Geller M. Oral manifestations of neurofibromatosis type 1 in children with facial plexiform neurofibroma: report of three cases. J Clin Pediatr Dent. 2015; 39(2): 168-71.
12. Jääsaari P, Visnapuu V, Nyström M, Peltonen S, Peltonen J, Happonen R.P. Dental age in patients with neurofibromatosis 1. Eur J Oral Sci. 2012; 120(6): 549-52.
13. Cunha KS, Barboza EP, Dias EP, Oliveira FM. Neurofibromatosis type I with periodontal manifestation. A case report and literature review. British dental journal. 2004 Apr 24;196(8):457-60.

14. Hirbe A.C, Gutmann D.H. Neurofibromatosis type 1: a multidisciplinary approach to care. Lancet Neurol. 2014; 13(8): 834-43.
15. Asgary S, Aminzadeh N. Unilateral gingival enlargement in patient with neurofibromatosis type I. N Y State Dent J. 2012; 78(6): 50-53.
16. Javed F, Ramalingam S, Ahmed H.B, Gupta B, Sundar C, Qadri T, Al-Hezaimi K, Romanos G.E. Oral manifestations in patients with neurofibromatosis type-1: a comprehensive literature review. Crit Rev Oncol Hematol. 2014; 91(2): 123-9.
17. Varsha VK, Hallikeri K, Girish HC, Murgod S. Expression of CD34 and CD68 in peripheral giant cell granuloma and central giant cell granuloma: An immunohistochemical analysis. Journal of oral and maxillofacial pathology: JOMFP. 2014 Sep;18(3):341.
18. Suresh Y, Anurag S, Prince K, Shallu T. Recurrent case of central giant cell granuloma with multiple soft tissue involvement. Natl J Maxillofac Surg. 2014; 5(1): 60-66.
19. Padmavathi Devi C, Swaroopkanth T, Sudhakar G, Kiranmai D, Sasank R, Sridharreddy D. Central Giant Cell Granuloma of Maxilla: A Case Report. Indian J Otolaryngol Head Neck Surg. 2013; 65(1): 192-194.
20. Ravi P.S.M, Sankalp V, Neha A, Udita S. Central giant cell granuloma: a case report. BMJ Case Rep. 2013; 10.1136: 1-4.
21. Tarsitano A, Del Corso G, Pizzigallo A, Marchetti C. Aggressive Central Giant Cell Granuloma of the Mandible Treated With Conservative Surgical Enucleation and Interferon-α-2a: Complete Remission With Long-Term Follow-Up. J Oral Maxillofac Surg. 2015; 7.
22. El Hadidi YN, Ghanem AA, Helmy I. Injection of steroids intralesional in central giant cell granuloma cases (giant cell tumor): Is it free of systemic complications or not? A case report. International journal of surgery case reports. 2015 Dec 31;8:166-70.
23. Deepanshu G, Vishal B, Prajesh D, Sanjay P, Abhinav A. Central Giant Cell Granuloma of Posterior Maxilla: First Expression of Primary Hyperparathyroidism. Hindawi Publishing Corporation Case Reports in Endocrinology. 2015; 170412: 1-7.
24. Anita M, Priyanka M, Ravindra K, Pranali W, Safia S. Nonsyndromic Synchronous Multifocal Central Giant Cell Granulomas of the Maxillofacial Region: Report of a Case. Journal of Dentistry, Tehran University of Medical Sciences, Tehran, Iran. 2015; 12(2): 157-162.