The Importance of non-surgical Periodontal Therapy in Patients with Drug gingival Enlargement - Case Series

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Abstract:

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The Importance of non-surgical periodontal Therapy in Patients with Drug gingival Enlargement - Case series

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Abstract
Induced gingival overgrowth with medication is a side effect of systemic therapy with anticonvulsants, immunosuppressants, and calcium channel blockers. It can emerge in patients in close relation to a number of general variables such as age, genetic predisposition, and length of medication or local factors such as preexisting gingival inflammation. Dentists and general practitioners should be trained to make prompt diagnoses by identifying oral symptoms that indicate a systemic effect of various medications.

Keywords: gingival overgrowth, periodontal treatment

Introduction

Gingival overgrowth is a proliferation of the gingiva triggered by a range of different etiological causes.

Enlargements may be inflammatory, drug-induced, linked with systemic illnesses or diseases, malignant, or false, depending on the etiopathogenesis.

Drug-induced gingival overgrowth or enlargement occurs as a result of adverse drug response in individuals using anticonvulsants, immunosuppressants, and calcium channel blockers but the drugs phenytoin, cyclosporine, and nifedipine cause substantial changes in the prevalence and severity of gingival overgrowth (1).

Drug-induced enlargement is linked to a patient's genetic susceptibility as well as the existence of pre-existing plaque or gingival inflammation and is a histomorphological change caused by a medication's adverse effects on the extracellular matrix (2).

A variety of risk factors for this condition have been identified, including demographic, pharmacological, periodontal, as well as genetic factors (3). The severity of gingival overgrowth is directly related to the degree of plaque accumulation and plaque-induced inflammation.

Calcium channel blockers are the most widely prescribed antihypertensive medications for individuals suffering from cardiovascular disease: hypertension, angina, and supraventricular cardiac arrhythmias. The most often implicated antagonist in drug-induced gingival overgrowth is nifedipine, a calcium antagonist (4) and numerous reports have associated gingival enlargement with nifedipine (5-6).

Anticonvulsants are a group of pharmacological agents used in the treatment of epileptic seizures, bipolar disorder, and borderline personality disorder. Gingival enlargement is one of the most common side effects linked with phenytoin treatment, valproic acid, and phenobarbital, and is very rare with primidone and vigabatrin. (7-9)

Immunosuppressive agents are commonly used in the treatment of autoimmune and immune-mediated diseases and transplantation, such as glucocorticoids, cytostatics, antibodies,

drugs acting on immunophilins, and other drugs. Gingival overgrowth is a serious side effect accompanying the use of cyclosporin (10).

Excessive gingival overgrowth can also change the form of the gingiva, compromising oral function, impairing proper dental hygiene, and impacting speech.

Case report 1

Here we present a case of nifedipine-induced gingival overgrowth in a 45-year-old male patient with a prior history of hypertension. For the last three years, the patient has been taking Tab. nifedipine 30 mg as prescribed by the cardiologist. The patient observed the swelling before 1 year and did not visit the dentist until he started gingival bleeding while brushing the teeth. Clinical periodontal examination presented gingival overgrowth, with bleeding during periodontal examination associated with dental plaque and poor oral hygiene (figure 1).

Case report 2

A 37-year-old female on long-term phenytoin therapy came to the Department of Periodontology and Oral Medicine. The patient had not received any prior dental therapy and is epileptic for 14 years and is undertaking phenytoin up to 600 mg/day. On intraoral examination, excessive gingival swelling was evident with bleeding on probing in both upper and lower anterior. The papillae were swollen and covering more than the cervical third of the tooth (figure 2).

Case report 3

A 32-year-old male patient reported at the Department of Periodontology and Oral Medicine chief complaints of pain exacerbated by biting, gingival swelling around upper frontal teeth. He was diagnosed with Ulcerative colitis and was treated with cyclosporine. Clinical examination presents severe purulent exudate on pressure and probing from the gingiva, pain on examination, and bleeding on probing. gingival enlargement, tooth mobility (figure 3).

In three presented cases clinical examination and the patient's medical history are used to make the diagnosis of drug-induced gingival overgrowth. Periodontal parameters: plaque index (PI) by Silness and Loe, bleeding on probing (BOP), probing pocket depth (PPD), the degree of GO (11-13) orthopantomography, complete blood count with glycemia, Sedimentation of erythrocytes, protein C reactive, were performed to proceed with the periodontal treatment plan. An erythematous, edematous gingival overgrowth was a common manifestation, accompanied by dental plaque, disturbance in oral patients functions, and has an anti-aesthetic result.

The treatment of gingival overgrowth consisted of nonsurgical periodontal therapy based, initially, on oral hygiene instruction, scaling and root planning, antiseptic mouthwashes, and drug substitution after consulting the physician. The patient in case 3 was with antimicrobial therapy. A plaque control program including instructions on oral hygiene and prevention was followed by continued patient motivation.

Patients were referred for consulting with a physician to reduce the dose or replace an appropriate medication. Nonsurgical periodontal therapy reduces the inflammatory component in the gingival tissues, however, in some cases gingival enlargements remain and surgical gingival excision might be necessary. The rate of gingival inflammation and growth is correlated with the duration of medication the patient is taking, and delays in periodontal treatment result in the surgical treatment of the gingiva.

Discussion

The impact of anticonvulsants, calcium channel blockers, and immunosuppressants on calcium and sodium ion flow may hold the key to understanding why three different treatments have a common side effect on gingival connective tissue causing fibrous gingival overgrowth(14). The presence of pre-existing plaque or gingival inflammation, the period of treatment with medications, dosage, and as well as a patient's genetic susceptibility, are related to drug-induced gingival enlargement (15). If the overgrowth recurs, a change in medication therapy should be evaluated, and surgical removal of the gingival tissue may be necessary in some of these patients. Nonsurgical periodontal treatment allows a more significant reduction of gingival overgrowth. Gingival enlargements (GE), if left untreated, can lead to periodontal disease, compromising the tooth's long-term prognosis.

Conclusions

The effective and adequate treatment of GE is dependent on accurately identifying the cause of the enlargement. Medical practitioners should inform their patients about the risk of gingival overgrowth as a side effect of different medications, and patient's motivation to maintain oral dental hygiene is very important. A multidisciplinary approach can help improve patient outcomes and is crucial in managing a patient with drug-induced gingival enlargement.

References

1. A. Doufexi, M. Mina, and E. Ioannidou, "Gingival overgrowth in children: epidemiology, pathogenesis, and complications. A literature review," Journal of Periodontology, vol. 76, no. 1, pp. 3–10, 2005.

2. H. Matsumoto, I. Noji, Y. Akimoto, and A. Fuj II, "Comparative study of calcium-channel blockers on cell proliferation, DNA and collagen syntheses, and EGF receptors of cultured gingival fibroblasts derived from human nifedipine, nicardipine and nisoldipine responders," Journal of Oral Science, vol. 43, no. 4, pp. 261–268, 2001.

3. Cliciane Portela Sousa, Claudia Maria Navarro, Maria Regina Sposto, "Clinical Assessment of Nifedipine-Induced Gingival Overgrowth in a Group of Brazilian Patients", International Scholarly Research Notices, vol. 2011, Article ID 102047, 5 pages, 2011. https://doi.org/10.5402/2011/102047

4.Butler RT, Kalkwarf KL, Kaldahl WB . Drug-induced gingival hyperplasia: phenytoin, cyclosporine, and nifedipine. J Am Dent Assoc 1987; 114: 56–60.

5.Asif, S.M., Shaik, N., Barthunia, B. et al. Nifedipine induced gingival enlargement in an edentulous patient: a case report with one year follow up. BMC Oral Health 18, 227 (2018). https://doi.org/10.1186/s12903-018-0690-4

6. Majola MP, McFadyen ML, Connolly C, Nair YP, Govender M, Laher MH. Factors influencing phenytoin-induced gingival enlargement. J Clin Periodontol 2000;27:506-512.

Butler RT, Kalkwarf KL, Kaldahl WB. Drug-induced gingival hyperplasia: phenytoin, cyclosporine, and nifedipine. J Am Dent Assoc. 1987; 114: 56-60.

7. Tan H, Gurbuz T, Dagsuyu IM. Gingival enlargement in children treated with antiepileptics. J Child Neurol. 2004; 19:958-63.

8. Asconape JJ. Some common issues in the use of antiepileptic drugs. Semin Neurol. 2002; 22:27-39.

9. Jaiarj N. Drug-induced gingival overgrowth. J Mass Dent Soc. 2003; 52:16-20.

10. Rayhana Malek, Bouchra El Houari, Jamila Kissa, "Periodontal Management of Cyclosporin A-induced Gingival Overgrowth: A Nonsurgical Approach", Case Reports in Dentistry, vol. 2019, Article ID 8609547, 8 pages, 2019. https://doi.org/10.1155/2019/8609547

11. Silness J, Loe H. Periodontal disease in pregnancy II. Correlation between oral hygiene and periodontal conditions. Acta Odont Scand. 1964;24:747–59. [PubMed] [Google Scholar]

12. Muhleman H, Son S. Gingival sulcus bleeding- a leading symptom in initial gingivitis. Helv Odontol Acta. 1971;15:107–13. [PubMed] [Google Scholar]

13. Seymour RA, Smith DG, Turnbull DN. The effects of phenytoin and sodium valproate on the periodontal health of adult epileptic patients. J Clin Periodontol. 1985;12:413–9. [PubMed] [Google Scholar]

14. Dongari-Bagtzoglou A; Research, Science and Therapy Committee, American Academy of Periodontology. Drug-associated gingival enlargement. J Periodontol. 2004;75(10):1424-1431. doi:10.1902/jop.2004.75.10.1424

15. Lauritano D, Lucchese A, Di Stasio D, Della Vella F, Cura F, Palmieri A, Carinci F. Molecular Aspects of Drug-Induced Gingival Overgrowth: An In Vitro Study on Amlodipine and Gingival Fibroblasts. International Journal of Molecular Sciences. 2019; 20(8):2047. https://doi.org/10.3390/ijms20082047

Figure 1. Severe gingival enlargement in the maxillary and mandibular arch, of the patient associated with Nifedipine medication.

Figure 2. Severe gingival enlargement in the maxillary and mandibular arch, of the patient associated with hydantoins.

Figure 5. Drug-induced gingival enlargement in a patient with cyclosporine