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A Medication-Related Gingival Enlargement-A Rare Case Report

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Abstract

Gingival enlargement caused by medication is a known side effect of some medications, most notably angiotensin II receptor blockers and calcium channel blockers. In this case study, a 40-year-old female patient on nifedipine and Telmisartan combination therapy for hypertension describes how she experienced gingival hypertrophy. The patient had poor oral hygiene and aesthetic problems due to increasing simultaneous gingival overgrowth impacting mainly in the maxillary and mandibular anterior regions.

Keywords: Gingival, Hygiene, Swelling, Papillae, Marginal.

Introduction

The gingival enlargement or gingival overgrowth, rather than hypertrophic gingivitis or gingival hyperplasia. Drug-induced gingival overgrowth (DIGO) also known as medication-related gingival enlargement, is a known adverse effect associated with a number of different pharmaceutical kinds.

These include immunosuppressants like cyclosporine, anticonvulsants like phenytoin, and specific calcium channel blockers like nifedipine, amlodipine, and diltiazem. Among calcium channel blockers, nifedipine is most typically related with increased gingival hyperplasia, however diltiazem, amlodipine, nitrendipine, and verapamil have also been connected to it. It involves multiple factors, including the drug's pharmacological effects on gingival tissues, genetic predispositions, and local factors like plaque accumulation and poor oral hygiene. Clinically, it appears as painless, firm, and sometimes fibrotic enlargements affecting interdental papillae and marginal gingiva. Severity varies widely, requiring interventions from conservative measures to surgical correction. Plaque accumulation tends to make regions more severe, which emphasizes the need of daily plaque control in

addition to expert periodontal care. Medical therapy, such as lowering the dosage or switching to an alternative medicine, can aid in the lesion's regression when ideal plaque control is not possible. In order to modify medication, dentists may consult with primary care physicians.

Managing medication-related gingival enlargement is a challenging task that requires an integrated approach by dentists, physicians, and pharmacists. Strategies include strict oral cleanliness, medicine adjustments or substitutions, and surgical removal in severe cases. Early detection and proactive management are critical for minimizing the impact on oral health and quality of life. This review examines current knowledge of medication-induced gingival enlargement, including epidemiology, pathogenesis, clinical characteristics, risk factors, and therapeutic methods. Raising healthcare practitioners' awareness can aid in the prevention, identification, and management of this serious oral side effect of routinely used drugs.

Case Details

A 40 -year-old woman presented with a 2 -year history of gradually swollen gums in both her upper and lower jaws. The patient, who had been diagnosed with hypertension and was taking nifedipine 50 mg and telmisartan 70 mg daily, had recurrent gingival pain and bleeding. Clinical examination revealed substantial gingival overgrowth in the marginal, attached gingiva, and interdental papillae in both upper and lower anterior region exhibiting the most significant swelling. The gingival growth was firm, non-tender, leathery, bulbous, and lobulated, which made chewing and speaking difficult. Initial evaluation suggestions included occlusal and panoramic radiographs, a possible gingivectomy, a thorough blood test, and a histological study. The patient received oral prophylaxis and hygiene recommendations, as well as a referral for prescription adjustments. However, because to personal circumstances aggravated by the pandemic, the patient stopped receiving follow-up care.

Discussion

Gingival enlargement, whether generalized or localized, presents a diagnostic difficulty because of its aesthetic impact and propensity for microbial development. It can be caused by hereditary factors, inflammation, medications, or systemic disorders. An abnormal increase in gingival tissue size brought on by systemic drugs is known as drug-induced gingival overgrowth. This term is deceptive because the growth is caused by an accumulation of extracellular matrix, primarily collagen, rather than by hyperplasia or hypertrophy of the cells.

Calcium channel blockers such as nifedipine and amlodipine are known contributors, but the specific processes are unknown. There are two types of processes at play: proinflammatory cytokines can be increased by medication buildup in gingival fluid, while non-inflammatory mechanisms can be attributed to folic acid uptake reduction, hormone changes, and increased keratinocyte growth factor.

According to the research, gingival enlargement varies with changes in calcium metabolism, metalloproteases, and integrin expression, all of which alter collagen degradation and synthesis. This fibrosis is distinguished by an abundance of activated fibroblasts and unregulated cytokines. Factors impacting these gingival alterations include medication type and dosage, drug interactions, oral health practices, plaque accumulation, other periodontal problems, and genetic variability influencing gingival fibroblasts.

Among calcium channel blockers, nifedipine, a first-generation medicine, produces gingival overgrowth in

roughly 20% of patients, but amlodipine, a third-generation drug, has a significantly lower prevalence of 1.7% to 3.3%. Especially in the anterior teeth, drug-induced gingival overgrowth (DIGO) can cause increased plaque and pseudo pockets, which can worsen or even cause periodontitis. Extensive gingival enlargement can be emotionally and physically demanding. The gingival volume typically develops gradually, but in severe cases, the gingival tissue may cover all of the teeth, making it difficult to speak and chew. Furthermore, gingival overgrowth can cause despair and anxiety, especially if it impairs one's aesthetics and ability to smile and produce facial emotions.

Gingival overgrowth, regardless of the reason, can increase the risk of dental decay and periodontal disease, as well as create aesthetic changes and clinical difficulties like discomfort, tenderness, bleeding, speech difficulty, aberrant tooth movement, and dental occlusion disorders. Plaque-induced inflammation, which causes swollen, red gingiva, might exacerbate the gingival shape abnormalities seen in drug-induced gingival overgrowth (DIGO). This makes plaque removal more difficult and perpetuates the condition.

Conclusion

Gingival overgrowth occurs in 15-83% of nifedipine patients, while it is extremely rare with amlodipine. Users of nifedipine are more likely to experience substantial overgrowth than those using amlodipine. With a pKa of 8.7, amlodipine is more polar than nifedipine, which is highly lipophilic and readily translocates through cell membranes. The mechanism underlying drug-induced gingival overgrowth is complex, with drug-cellular interaction playing an important part in its development.

Non-surgical treatment for drug-induced gingival overgrowth (DIGO) aims to minimize inflammation while perhaps avoiding surgery. Managing inflammation aids in determining whether surgery is required and assures a less hemorrhagic field if surgery is necessary. Consultation with a physician about drug substitution is vital, but it should be approached with caution due to the potential risks of changing drugs for serious diseases. For patients using medications associated with gingival enlargement, a 3-month interval is advised between periodontal maintenance appointments. While non-surgical treatments usually take two to three months to show benefits, surgery offers immediate relief.

Scalpel gingivectomy is a straightforward and efficient procedure, but it can result in hemorrhage after surgery. Substitutes such as carbon dioxide, argon, or diode lasers provide quick results with less tissue damage.

Over the course of seven decades, electrosurgery has been utilized in dentistry to effectively induce hemostasis. However, because of the enormous latent heat it produces, thermal necrosis can impede the healing process of wounds. The type of waveform, electrode size, duration of incision, and energy employed are some of the variables that affect this heat. Despite these concerns, electrosurgery can be useful in tough circumstances where traditional scalpel techniques are difficult or impracticable, such as with minors, mentally disabled patients, or those with compromised hemostasis.

For patients using cyclosporine (CsA) or nifedipine, however, there is a 40% chance of significant gingival enlargement recurring within 18 months of surgery, particularly if medication or other risk factors continue. Usually, gingival overgrowth develops one to three months after the medicine is started.

Drug-induced gingival overgrowth (DIGO) should be treated based on the medication and clinical presentation. Initially, discuss with the patient's doctor about discontinuing or substituting the medication. While discontinuing the drug is typically impractical, substituting it may be an option. Allow 8-12 months after stopping the problematic medicine to evaluate gingival progress before considering surgery. Prioritize effective plaque management as the initial course of treatment. Good oral hygiene and regular professional plaque removal can help to decrease gingival overgrowth and enhance gingival health, perhaps reducing recurrence in surgically treated patients.

Legend Figures

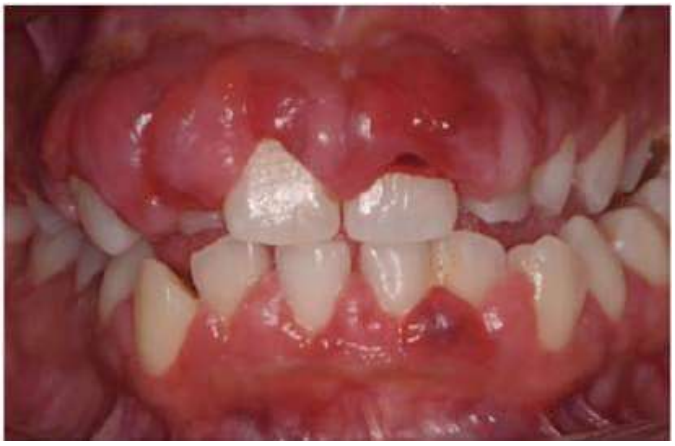

Figure 1

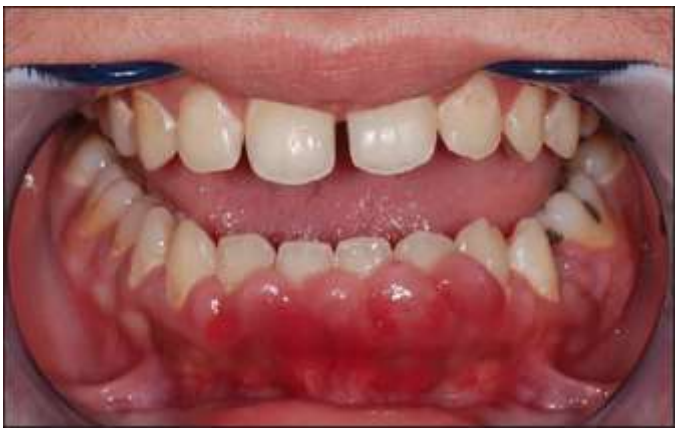

Figure 2

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