



OLGU SUNUMU / CASE REPORT

Drug induced gingival enlargement: dentist's dilemma

İlaca bağlı diş eti büyümesi: diş hekiminin ikilemi

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Abstract

Gingival enlargement is a routine finding in regular dental practice. Though it has many etiological factors, enlargement due to drugs which are administered to treat the systemic problems is of major concern which needs attention. Drug-induced gingival overgrowth is frequently associated with anti hypertensives, anticonvulsants and immunosuppressants. As gingival enlargement develops, it affects the normal oral hygiene practice and may interfere with masticatory functions. It gradually becomes a source of pain and the condition often leads to disfiguration. Within the group of patients that develop this unwanted effect, there appears to be variability in the extent and severity of the gingival changes. It would seem ideal to identify and explore possible risk factors and relate them with the treatment plan. Here, we present a case of a 33 year old female patient on nifedipine since five years with drug induced gingival enlargement and its management.

Key words: Gingival enlargement, calcium channel blockers, nifedipine

Öz

Dişeti büyümesi düzenli diş pratiğinde rutin bir bulgudur. Pek çok etiyolojik etkene sahip olmasına rağmen, sistemik problemleri tedavi etmek için uygulanan ilaçlara bağlı genişleme, dikkat edilmesi gereken önemli bir konudur. İlaç kaynaklı dişeti aşırı büyümesi sıklıkla anti hipertansifler, antikonvülzanlar ve immünsüpresanlar ile ilişkilidir. Gingival büyüme geliştikçe, normal ağız hijyeni pratiğini etkiler ve çiğneme fonksiyonlarına müdahale edebilir. Bu yavaş yavaş bir ağrı kaynağı haline gelir ve durum genellikle bozulmaya yol açar. Bu istenmeyen etkiyi geliştiren hasta grubunda, dişeti değişimlerinin boyut ve şiddetinde değişkenlik olduğu görülmektedir. Olası risk faktörlerini tanımlamak ve araştırmak ve tedavi planı ile ilişkilendirmek ideal görünmektedir. Burada, beş yıldan beri nifedipin tedavisi almaktayken ilaca bağlı gingival büyümesi olan 33 yaşında bir kadın hasta sunulmuş ve tedavisi tartışılmıştır.

Anahtar kelimeler: Gingival büyüme, kalsiyum kanal blokleri, nifedipin.

INTRODUCTION

The clinical manifestations of gingival enlargement can range in severity from minor variations to complete coverage of the teeth, creating subsequent functional and aesthetic problems for the patient. Scientists consider that factors such as age, gender, genetics, concomitant drugs, and periodontal variables might contribute to the expression of drug-induced gingival overgrowth¹. When treating patients with gingival overgrowth, dental clinicians need to be prepared to offer maintenance and preventive therapy, emphasizing periodontal maintenance and patient education. The affected

gingiva presents a bulbous and irregular appearance and requires special modifications in the delivery of dental hygiene care. Dental clinicians play a vital role in the prevention and control of this condition because of the significant correlation between plaque/gingivitis and gingival overgrowth¹. Drugs that most commonly cause gingival enlargement include anticonvulsants, antihypertensives and immunosuppressants. Many of the Calcium channel blockers used as antihypertensive drugs have been found to cause gingival enlargement². Nifedipine, a dihydropyridine, is a calcium channel blocker that has been widely used for the treatment of cardiovascular disease, especially hypertension. It inhibits the influx of extracellular calcium ions

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across the membranes of cardiac and vascular smooth muscle cells without altering calcium concentrations in the blood³. The side effects of nifedipine include hypotension, headaches, flushness, dizziness, tremor, joint stiffness, peripheral edema, dermatitis, pruritis, urticaria, and gingival overgrowth⁴. The aim of this case report and review is to refine our knowledge about known drugs which cause gingival enlargement and ameliorate about the differential diagnosis and concepts of its treatment.

CASE

A 33 year old female patient reported to the dental clinic with a chief complaint of swelling in the gums since one year. Patient complained of pain and bleeding from gums on brushing. Patient was under medication for pulmonary hypertension - nifedipine 20 mg twice daily since five years. General

examination and extraoral findings were non-contributory. Intraoral examination revealed generalized edematous gingival tissues with the interdental, marginal and attached gingiva affected [Figure 1]. The enlarged gingivae were pinkish in colour with a lobulated beaded appearance involving nearly the coronal third of all teeth. Gingiva was firm and oedematous in consistency. Migration and displacement of teeth was seen with the presence of local irritant factors and periodontal pockets. Based on the history and clinical findings, a provisional diagnosis of gingival enlargement associated with Nifedipine was made, and no other risk factors were identified. The presence of local irritating factors contributed to the mild inflammatory component of the gingival enlargement. Her normal blood parameters and reports ruled out systemic, neoplastic or conditioned gingival enlargement. An orthopantomograph was taken to assess bone level which showed severe bone loss [Figure 2]



Figure 1- A- shows nodular gingival enlargement seen covering upto incisal edges of maxillary and mandibular anterior teeth. **B&C-**gingival enlargement covering whole crown portion in maxillary anteriors and premolars. **D-**nodular gingival enlargement seen in mandibular teeth with migration and displacement of teeth.

Treatment consisted of conservative therapy with scaling, root surface instrumentation and prophylaxis. The patient was advised chlorhexidine mouth rinse 0.2% twice a day. The patient's

physician was consulted, and a replacement for nifedipine to manage hypertension was sought. Surgical treatment was contraindicated due to medical reasons. Meticulous oral hygiene

instructions given to the patient to maintain good oral health.



Figure 2. Orthopantomograph reveals generalised bone loss.

DISCUSSION

Calcium Channel Blockers, have been frequently implicated as an etiologic factor for gingival enlargement or overgrowth⁵. Calcium antagonists like Nifedipine block the influx of calcium ions, thereby affecting homeostasis of collagen. The synthesis and degradation of the collagen being altered lead to the abnormal growth⁶. Other factors like increased production of heparin sulfate glycosaminoglycan (HSPG), basic fibroblast growth factor (bFGF), and transforming growth factor-beta (TGF- β) were found to be increased in nifedipine- and phenytoin-induced gingival hyperplasia⁷. The incidence and prevalence of Nifedipine-induced gingival enlargement is contentious. According to the literature, the prevalence ranges from 14.7% to 83%. Our reported case was under medication of Nifedipine for five years.

Factors like age, genetic predisposition, pharmacological actions, dose, plaque, and oral hygiene have been attributed for gingival enlargement in Nifedipine-induced gingival enlargement⁸. The age is indirectly proportional to the severity of the enlargement. Younger age people show more enlargement because they have greater fibroblastic metabolism and hormonal change than the elderly⁹. Our case report presented a classical case of a young female patient on Calcium channel blockers with drug induced gingival enlargement.

The enlargement could be localized or generalized, affecting the entire mouth, and it could range from mild increase of the interproximal gingival papillae to severe enlargement of both marginal and papillary tissues. In its initial stages, the gingival enlargement may appear as a firm nodular enlargement of the

interdental papillae, and its prevalence in the mouth is varied. It affects more the anterior rather than the posterior teeth, and is more pronounced on the facial/buccal than the palatal/lingual surfaces¹⁰. In severe cases the entire papillae and the surrounding tissues are enlarged, giving the gingival tissues a lobulated appearance. The enlargement could extend vertically (coronally) and interfere with mastication and speech. It can also create esthetic problems if the anterior teeth are involved. The overgrown tissue creates pockets that harbor pathogenic bacteria that are beyond the reach of a toothbrush or dental floss. These negative changes impair optimal oral hygiene and can lead to an increased host susceptibility to oral infection, caries and periodontal disease¹¹. Our case also presented a severe form of Nifedipine induced gingival enlargement which needed an elaborate differential diagnosis that includes thorough medical and dental histories, a careful evaluation of nature of enlargement, and an identification of the etiologic factors.

Drug-induced gingival enlargement must be differentiated from

1. Inflammatory enlargement which is acute and appears as a localized gingival swelling characterized by acute pain of rapid onset suggesting an abscess. Inflammatory enlargements usually are secondary complication to any of the other types of enlargement, creating a combined gingival enlargement¹².
2. Idiopathic or familial or hereditary gingival enlargement: affects the attached gingiva, as well as the gingival margin and interdental papillae but the involvement may be limited to either jaw. The enlarged gingiva is pink, firm, and almost leathery in consistency and has a characteristic minutely pebbled surface¹².
3. Conditioned enlargement: occurs when the systemic condition of the patient exaggerates or distorts the usual gingival response to dental plaque. It includes hormonal (pregnancy, puberty), nutritional (associated with vitamin C deficiency), and allergic (plasma cell gingivitis). The gingiva shows features of chronic inflammatory enlargement especially interproximally^{12,q}.
4. Systemic diseases induced gingival enlargement: Several systemic diseases viz. leukemia, sarcoidosis, tuberculosis, and other

granulomatous diseases can result in gingival enlargement. Hematological investigations (as in leukemia) and histopathological examination (leukemic infiltrate in leukemia, foreign body giant cell in sarcoidosis, tuberculosis) are useful in establishing the diagnosis¹².

5. Neoplastic enlargement or gingival tumors: It may appear as slowly growing spherical mass that tends to be firm and nodular or hard, wart-like protuberance from gingival surface¹².

Management of drug-induced gingival enlargement includes surgical and/or non-surgical therapies. Non-surgical treatment, where it is possible, is based on the interruption, modification of the dosage or replacement of the drugs. The primary aim of nonsurgical approaches is to reduce the inflammatory component in the gingival tissues and thereby avoid the need for surgery¹³⁻¹⁷. After the interruption of therapy or the replacement of drugs, follow-up of six to twelve months is important to evaluate the resolution of gingival enlargement and/or the necessity of a surgical treatment⁷.

The surgical management includes the scalpel gingivectomy, periodontal flap surgery, electrosurgery, and laser excision. The clinician's decision to choose gingivectomy or periodontal flap surgical techniques must be made on a case-by-case basis and should take into consideration the extent of area to be involved¹⁸.

Drug induced gingival enlargement is one of the most widespread unwanted effect of systemic medication on the periodontal tissues. It would be best to identify and explore possible risk factors relating to both prevalence and severity of drug-induced gingival enlargement. It is very important for the dental clinician to work in conjunction with the patient's physician in an attempt to change medication or determine the possibility of discontinuing a drug. Non-surgical treatment followed by proper surgical approaches can produce a positive treatment response.

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