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Management of Amlodipine-Induced Gingival Enlargement With A Conventional Gingivectomy Treatment: Case Report

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Abstract

Introduction: Gingival enlargement defined as overgrowth or increase in size of the gingiva which is generally a multifactorial condition that develops as an interaction between the host and the environment or in response to various stimuli. One of the most common causes is drug- induced gingival enlargement. Almost all cases of drug-induced gingival enlargement are caused by anticonvulsants, immunosuppressants, and calcium channel blockers (CCB). Amlodipine consumed by hypertensive patients can trigger gingival enlargement. The clinical picture of gingival enlargement usually displays enlarged interdental papillae that produce a lobulated or nodular morphology that is normally confined to the attached gingiva and gingival margin and is often found anteriorly.
Objective: To discuss the management of gingival enlargement therapy in hypertensive patients taking amlodipine with conventional gingivectomy techniques.
Case: A 67-year-old man came to the Hasanuddin University Dental and Oral Teaching Hospital with complaints of swollen gums in the upper and lower jaw accompanied by loose teeth and bleeding easily when brushing his teeth. The swelling appeared 1 year ago and was followed by teeth mobile 6 months ago, there is a bulge around the papilla and gingival margin so that it almost covers the crown, pale in color and painless. The patient has a habit of using a toothpick after eating. The history showed that the patient had a history of high blood pressure and was taking blood pressure medication (amlodipine 5 mg).
Case Management: Gingival enlargement treatment begins with initial therapy including; plaque control, Scaling Root Planning (SRP), Dental Health Education (DHE), and referral to an internal medicine specialist. A week after the initial therapy, conventional gingivectomy was performed and tooth 41 was extracted. The control results showed that the gingiva appeared normal with complaints of swelling and bleeding disappearing. Patients are instructed to maintain oral health, avoid using toothpicks.
Conclusion: Gingiva enlargement maintenance in patients taking amlodipine with conventional gingivectomy techniques show good results clinically, as well as provide patient satisfaction.

Keywords: gingival enlargement, calcium channel blockers, amlodipine, gingivectomy

Introduction

Drug-induced gingival enlargement refers to the growth of gingival tissue that is not normal due to the use of systemic drugs including anticonvulsants, immunosuppressants and calcium channel blockers (CCB) such as amlodipine in the area of anterior teeth.[1,2] This is one of the complaints in the oral cavity of patients with certain conditions, especially affecting the

aesthetics and function of the patient, especially in the area of the anterior teeth.[2] The known risk factors for drug-induced gingival enlargement are drug variables, poor oral hygiene, periodontal conditions, gender, age, and genetic factors.[3]

Common clinical characteristics of drug-induced gingival enlargement include variation in the pattern of enlargement between or within patients; tending to be more frequent on the anterior gingiva; in extensive cases, gingival enlargement may cover part (or all) of the crowns of many involved teeth; the gingival tissue appears pink or perhaps slightly paler than usual; the tissue is dense, tough, and lobules form that may appear inflamed or fibrotic depending on the degree of inflammation induced by local factors; higher prevalence in younger age groups; onset within 3 months of drug use; and if this situation is left unchecked it can lead to mobility and loss of teeth.[1,4] In addition, clinical lesions and their histological characteristics cannot be distinguished between gingival enlargement caused by one drug to another.[4,5] Patients may complain of discomfort when eating, teeth feel loose or sore, and gums bleed during oral hygiene activities.[3]

Careful clinical examination and through history are the cornerstones of the diagnosis of drug-induced gingival enlargement. The main treatment methods include non-surgical approaches (scaling and root planning) followed by surgical treatment, namely gingivectomy; both treatments are usually combined with maintenance therapy.2[2]

Case Report

A 67-year-old man came to the Hasanuddin University Dental and Oral Teaching Hospital with complaints of swollen gums in the upper and lower jaw accompanied by loose teeth and bleeding easily when brushing his teeth. The patient reported that the swollen gums had occurred one year ago followed by teeth mobile since six months ago. The patient worried that the gums will get bigger and interfere with his aesthetics. The history showed that the patient had a history of high blood pressure with a blood pressure of 160/110 mmHg and was taking blood pressure medication (amlodipine 5 mg).

Extraoral examination revealed no lymphadenopathy and no swelling of the head and neck area. Intraoral examination showed the presence bulge around the papillae and gingival margin to almost cover the crown, pale and painless. BOP (+), pocket (+), and tooth mobility (+). An OHI-S examination was carried out with a score of 4.2 which indicated the degree of oral hygiene in the patient was in the poor category. The patient has a habit of using a toothpick after eating. The patient diagnosed with gingival enlargement et cause amlodipine.

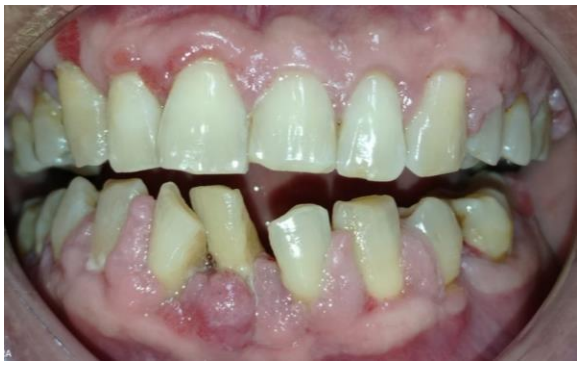

Figure 1. Gingival enlargement of the anterior mandibular gingiva.

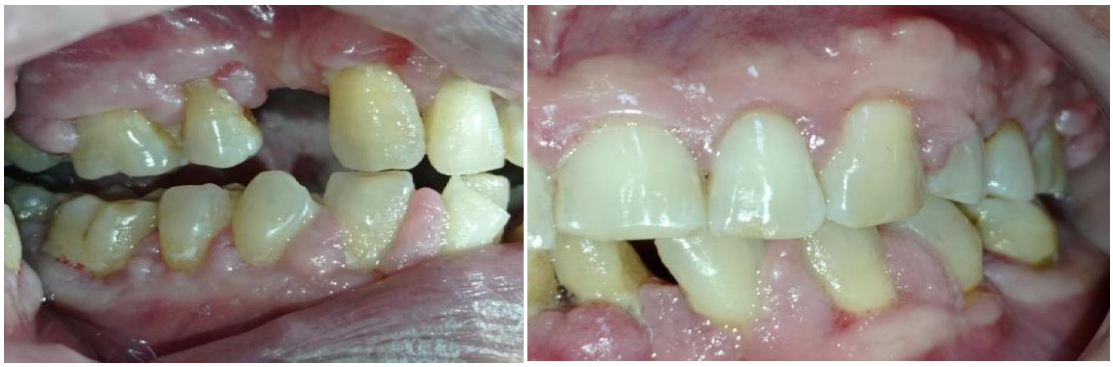

Figure 2a. Gingival enlargement on posterior left mandibular gingiva, **2b.** posterior mandibular gingiva left right.

Prior to treatment in the form of a gingivectomy, DHE was carried out regarding how to maintain oral hygiene and non-surgical treatment to improve the patient's OH. After that, the patient was consulted to the internal department to control blood pressure and carry out several examinations so that the treatment carried out was safe for the patient's systemic condition. After two weeks, the patient came back with the treatment given by the internist, and the suggestions treatment for the patient. From the results of the consul, the internist stopped using the amlodipine which had been consumed by the patient and replaced it with the Candesartan cilexetil 16 mg as well as recommendations in the form of allowing surgery to be carried out with local anesthetic nor epinephrine if the patient's blood pressure was less than

140/90 mmHg. The patient was previously explained the procedure and asked for consent regarding the treatment to be carried out by signing an informed consent. After that, in the early stages, disinfection up to the palate was carried out in all anteroposterior regions using betadine. A local anesthetic injection in the form of 2% lidocaine nor epinephrine was performed in all areas where the surgical procedure was to be performed. Mark the bottom of the pocket using a pocket marker so that bleeding points are obtained on each gingival surfaceenlarged asreference to gingivectomy.

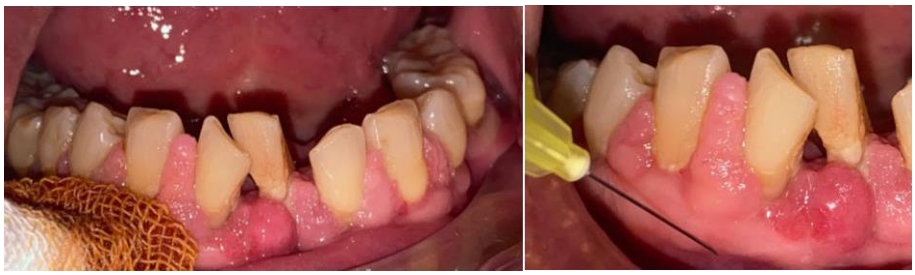

Figure 3. Extra and intraoral disinfection, **Figure 4.** Infiltration Anesthesia

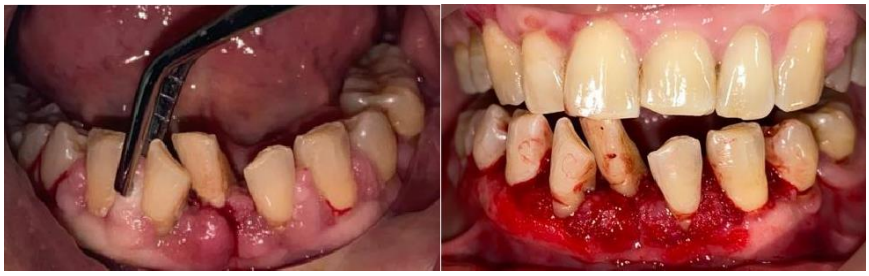

Figure 5. Determination of bleeding points with a pocket marker, **Figure 6.** Incision with a scalpel

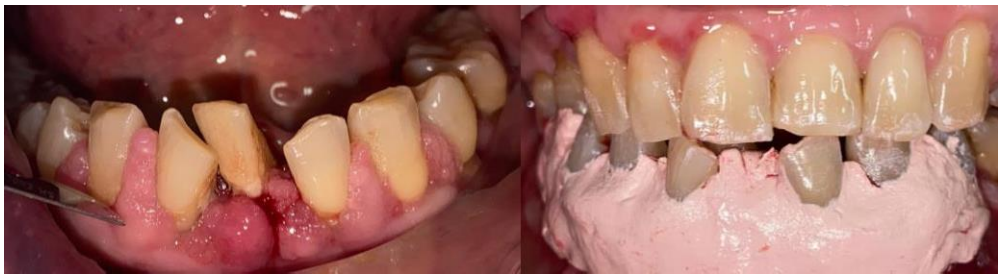

Figure 7. Clinical appearance after gingivectomy, **Figure 8.** Installation of a periodontal pack

An incision was made using blade no.15 on the bleeding point that had been previously obtained. It appears that the surface of the tooth crown is more clearly visible after gingivectomy in the lower anteroposterior region. Finally, the installation of periodontal packs was carried out in all areas that had been gingivectomy performed.

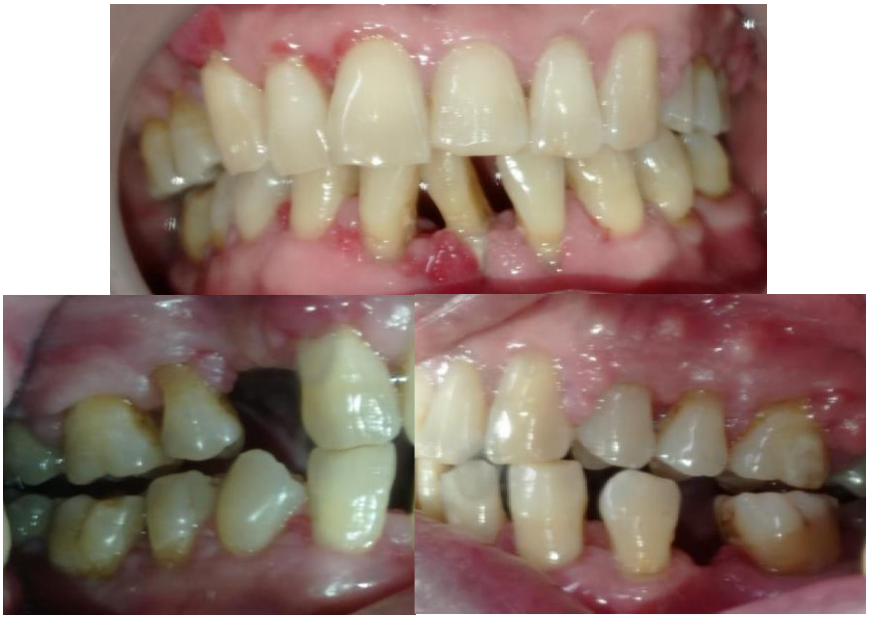

Figure 9. Control 2 weeks

The control 2 weeks after the gingivectomy was still hyperemic, then irrigation was carried out using NaCl, the periodontal pack was given again and it was scheduled for the next control. There was a change in the contour of the gingival surface in the control 6 months after the gingivectomy, there was no recurrence of gingival hyperplasia, the attached gingiva was well formed on the tooth surface, and the patient felt very comfortable.

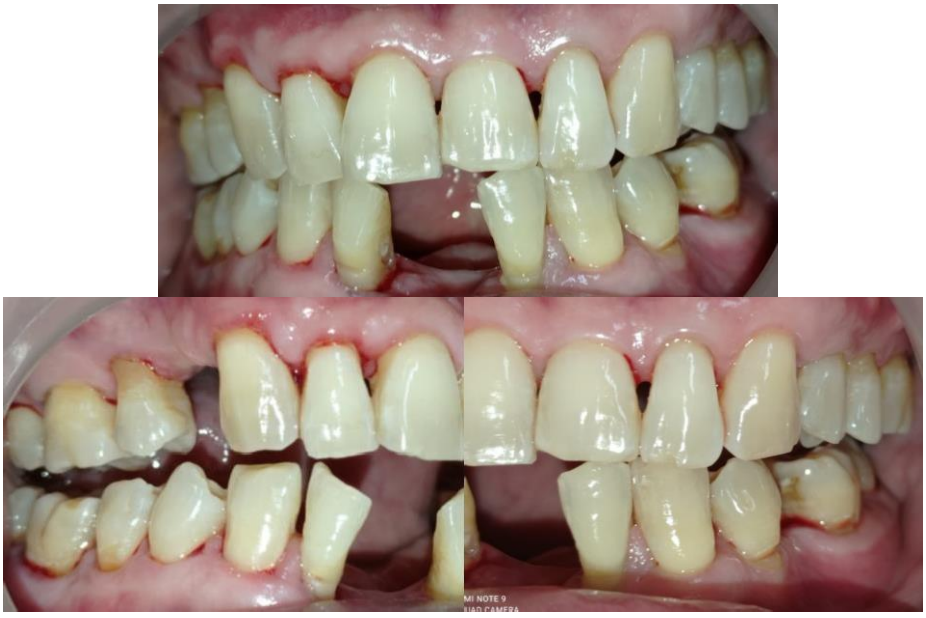

Figure 10. Control 6 months

Discussion

Hypertension is a cardiovascular disorder with a high prevalence in Indonesia where it most often affects adults and the elderly population which increases the risk of stroke, coronary heart disease and heart failure. As a result, more and more patients are taking antihypertensive drugs, particularly calcium channel blockers (CCBs) such as nifedipine or amlodipine. However, patients are generally unaware of the potential oral side effects of these drugs, which can affect gingival health and interfere with mastication, esthetics, and social life.[6,7]

CCBs are considered as one of the first-line therapeutic options to treat hypertension and reduce hypertension-associated cardiovascular morbidity and mortality. These CCBs have the ability to interact with cardiac or vascular voltage-dependent L-type transmembrane calcium channels (or both). CCBs can be distinguished based on their chemical structure into four groups, namely dihydropyridines (nifedipine and amlodipine), diphenylalkylamines (verapamil), benzothiazipines (diltiazem), and diphenylpiperazine (flunarizine).[7,8]

Amlodipine reduces hypertension by blocking voltage-gated L-Type channels. Amlodipine prevents myosin activation and phosphorylation, contraction of vascular smooth muscle, and an increase in blood pressure. The same mechanism of action also prevents precipitating angina. Like all drugs, amlodipine is associated with some side effects. These include pulmonary and peripheral edema, heart failure, dizziness, headache, nausea and abdominal pain. In the head and neck region, amlodipine is associated with gingival enlargement, changes in taste (dysgeusia), loss of taste sensation (ageusia) and disturbance of smell (dysosmia).[9] Amlodipine has a long half-life of between 30 and 50 hours. Generally, amlodipine-induced gingival enlargement is reported within three months after initiation of the drug at a dose of 10 mg/day. The duration of gingival enlargement may vary due to multifactorial causes such as genetic susceptibility and host response to drug-induced gingival fibroblasts, interleukins, and matrix-metalloproteinases. Other significant risk factors include poor oral hygiene, genetic susceptibility, drug dosage and duration of treatment.[10]

The mechanism of drug-induced gingival enlargement is still not clearly defined, but can be explained by two different mechanisms, namely inflammation and non-inflammation. The mechanism of gingival enlargement due to non-inflammation is due to an increase in the connective tissue matrix which is dominated by collagen fibers.[11] Amlodipine-induced gingiva *enlargemen t*presents as a general painless swelling of the gingiva. Prominent involvement of the interdental papillae that begins soon after drug ingestion is usually seen,*gingival enlargement* These can range from localized enlargement of the interdental papillae like a mulberry to a lobulated gingival overgrowth with a dense consistency to hard on palpation.

The anterior gingiva is more frequently found to be involved. Loss of scalloped margins, gingival bleeding and erythema due to inflammation may also occur. Bleeding on probing may be rare. Mobility and eventual tooth loss are noted in chronic cases. Patients come to the dentist because of aesthetic or functional problems.[9]

Drug-induced gingival enlargement may occur in the oral cavity with little or no plaque and may not be seen in the oral cavity with accumulation of plaque buildup. Some researchers believe that inflammation is a prerequisite for the development of enlargement, which can therefore be prevented by removing plaque and careful cleaning of the oral cavity. Cleansing the oral cavity by brushing or using chlorhexidine toothpaste can reduce inflammation, but will not reduce or prevent overgrowth.[12]

The strategies for managing drug-induced gingival enlargement can easily be categorized as non-surgical or surgical approaches. Although various non-surgical measures have been shown to be useful in the management of drug-induced gingival enlargement, surgical correction of gingival overgrowth is still the most frequently performed treatment. Such treatment is only recommended when the overgrowth is severe. From a patient perspective, surgical correction should result in little or no pain or postoperative sequelae, good esthetics and a reduced risk of recurrence. Currently, the common surgical management includes scalpel gingivectomy, overgrowth flap surgery, electrosurgery and laser excision.[1] Treatment should be based on the drugs used and the clinical appearance of the individual case. Initial consideration should be given to the possibility of discontinuing or changing the drug. Either of. Discontinuation of deviant drugs is usually not a practical solution. However, substituting it with another drug may be a practical solution. If drug substitution is attempted, it is important to allow 6–12 months to elapse between discontinuation of the offending drug and possible resolution of the gingival enlargement before the decision to apply surgical treatment is made.[1]

Conclusion

Patients with hypertension who consume amlodipine can trigger gingival enlargement. This can be influenced by the drug itself and exacerbated by the presence of plaque due to poor patient OH. It is important to educate patients to undergo oral examination in the early stages of taking CCB to prevent these unwanted effects. In addition, good communication between the dentist and the patient's internist in providing integrated care can provide a good prognosis.

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