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CONGRESS PROCEEDING

Periodontal Treatment Of Gingival Overgrowth Due To Amlodipine Use: Case Series

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Abstract

Purpose: In this case series, clinical properties of gingival overgrowths deriving from the usage of amlodipine, which is a type of calcium channel blockers and its treatment protocols are explained.
Methods: Three male patients aged 15, 60 and 45 applied to our clinic with the complaints of gingival overgrowth and bleeding. In the anamnesis, it was learned that they were using antihypertensive medication containing amlodipine. In the first session, scaling and root planning applications were performed. Then, the patients who were given detailed oral hygiene instructions including tooth brushing and interface cleaning, consulted with the relevant physicians. It was deemed appropriate to replace the drug the patients were using with another antihypertensive drug, which is an alternative that does not lead to gingival overgrowth. After the controls performed at certain time intervals and oral hygiene evaluations, it was observed that a perfect recovery was achieved. In addition to these, gingivectomy was performed using classic surgical method under local anesthesia in one case.
Results: All three patients showed uneventful healing without any complications. During periodic controls, it was observed that patients' complaints disappeared, the gingiva regained their natural physiological form, aesthetically pleasing results were achieved, no recurrences were observed in the 6th month and periodontal health could be maintained.
Conclusion: Gingival overgrowth can make oral hygiene practices difficult, increasing plaque retention which causes aesthetic problems, therefore it needs to be treated. The treatment protocol for gingival overgrowth due to drug use includes the replacement or discontinuation of the current drug with an alternative drug with the physician's consultation, after the initial periodontal treatment and oral hygiene practices, periodontal surgical procedures and regular controls in severe cases. Treatment not always start with surgery, at times it can be treated simply by controlling bacterial plaque and discontinuing or changing the medication. Nevertheless, physicians should consider alternative treatments such as additional periodontal surgical procedures when necessary.

Key words: Gingival overgrowth; Amlodipine, Hypertension, Calcium channel blockers

Introduction

Gingival overgrowth is a common type of gingival disease. Both medication-related gingival lesions, formerly known as "gingival hyperplasia" or "gingival hypertrophy," are now referred as "gingival enlargement" or "gingival overgrowth", because the histologic composition of the pharmacologically changed gingiva was not reflected correctly in the earlier names. There are a growing variety of drugs that can cause gingival overgrowth, but gingival overgrowth can also be caused by a wide range of pathological and idiopathic reactions. Drug-induced gingival growths generally begin in the papillary and marginal gingiva regions, and their frequency and severity are most common on the labial surfaces of the maxillary and mandibular anterior teeth.[1,2] It is an important periodontal issue, not only because of aesthetic appearance, but also because of the development of the ideal environment for microbial dental plaque. It can cause tooth decay, infections and periodontal diseases, which may lead to undesirable results in terms of speech, chewing and aesthetic appearance, and therefore needs to be treated.[3] Anticonvulsants, immunosuppressants and calcium channel blockers are the three main classes of drugs associated with gingival overgrowth, based on their therapeutic actions.[2] Calcium channel blocker or calcium antagonists, antihypertensive medications are widely used in patients with angina or peripheral vascular disease.[2,4] They act by blocking the flow of calcium ions through the membranes of cardiac and smooth muscle cells and blocking intracellular mobilization of calcium4. Calcium channel blockers are known as benzothiazepine derivatives (diltiazem), phenylalkylamine derivatives (verapamil),

or substituted dihydropyridines based on their chemical composition (amlopidine, felodipine, isradipine, nicardipine, nifedipine, nitrendipine, oxodipine, nimodipine and nisoldipine).[4,5] Amlodipine, a calcium channel blocker, has been identified as one of the possible etiological causes of gingival overgrowth.[2,4,6] In this context, the aim of the study is to offer suggestions to physicians that the treatment of drug-induced gingival overgrowth should not be started with surgery at first, but that in some cases additional periodontal surgical procedures may be required in addition to non-surgical methods. In this case series, intraoral clinical features and treatment protocols of gingival overgrowths due to amlodipine use are presented.

Methods

Case 1

A 15-year-old male patient applied to the periodontology clinic with complaints of excessive gingival overgrowth and bleeding. In the clinical examination it was observed that the patient had apparent overgrowth, redness, pseudopockets, excessive plaque and calculus. In the anamnesis, it was learned that the patient had been using an antihypertensive drug containing amlodipine for 8 months due to the nephrotic syndrome disease. In the first session, scaling and root planning applications were performed with ultrasonic devices and periodontal hand instruments. Then, the patient who was given detailed oral hygiene instructions including tooth brushing and interface cleaning, consulted with the relevant physician. It was deemed appropriate to replace the drug of the patient with an antihypertensive drug containing captopril. In the controls, the necessary periodontal procedures were performed and the patient was provided motivation on maintaining oral hygiene practices.

Case 2

A 60-year-old male patient with complaints of excessive gingival overgrowth and bleeding applied to the periodontology clinic. In the clinical examination, apparent overgrowths, redness, dental caries, deep periodontal pockets, excessive plaque and calculus were observed. In the anamnesis, it was learned that the patient had been using an antihypertensive drug with amlodipine content for 5 years. The patient who was performed initial periodontal treatment in the first session and given detailed oral hygiene instruction, consulted with the relevant physician. It was deemed suitable to replace the patient's medicine with an antihypertensive drug containing enalapril. The needed periodontal procedures were performed and the patient was provided motivation on maintaining oral hygiene practices in the controls.

Case 3

A 45-year-old male patient with excessive gingival overgrowth, bleeding and pain applied to our periodontology clinic due to these complaints. A large amount of plaque and calculus was detected in the patient due to the insufficient oral hygiene practices. Deep periodontal pockets and pseudopockets were also present on probing. Overgrown gingival tissues were soft, red or bluish-red on initial periodontal examination, also extremely fragile and was bleeding easily on probing. According to the anamnesis obtained from the patient, it was learned that the patient had hypertension and had been using an antihypertensive drug containing amlodipine due to his condition for 3 years. The patient said that he noticed gingival overgrowth within a few months after starting to use the drug containing amlodipine. In the first session, the patient who was performed initial periodontal treatment and given detailed oral hygiene instruction, consulted with the relevant physician. It was deemed appropriate to replace the drug of the patient with an antihypertensive drug containing captopril. As a result of the controls performed at certain time intervals and oral hygiene evaluations, it was observed that a great improvement was achieved, and gingivectomy procedure was planned, as the shape of the gingiva did not recuperate as desired, despite the fibrotic and firm consistency. Then, with the gingivectomy procedure applied with classical surgical method under local anesthesia, no.15 scalpel was used with the classical surgical method. Later, periodontal dressing (Coe-Pack, GC America Inc., USA) was applied. The gingiva was shaped, recuperated to its natural physiological form, and the patient became able to access all the areas in his mouth with ease.

All patients showed uneventful healing without any complications. They were recalled to controls and evaluated regularly on the 3rd, 7th, 14th days and in the 1st, 3rd and 6th months. The needed periodontal procedures were performed and the patients were provided motivation on maintaining oral hygiene practices in the controls. After Phase 1 periodontal therapy, it was determined that the bleeding and inflammation in the gingiva were reduced to a great extent in all the cases, also the gingiva became pink and firm. In the first and second cases, aesthetically and functionally satisfying results were achieved, additional surgical procedures were not needed Figure 1, Figure 2. In the third case however, especially in the papillary areas, it was observed that the presence of retention areas had not completely gained their natural physiological form. For this reason, the gingivectomy procedure was performed using the traditional surgical procedure under adrenaline including articaine local anesthesia and the gingiva was shaped, restored to its natural physiological form and the patient could reach the formerly inaccessible areas more easily. Following that, postoperative treatment included twice-daily use of a mouthwash containing chlorhexidine (Andorex, Pharmaceuticals Ind. and Trade Co. Ltd., Turkey) and analgesic (Apranax Fort 550mg, Abdi İbrahim Pharmaceuticals Ind. and Trade Co. Ltd., Turkey). The patient's symptoms vanished, the gingiva returned to its natural physiological state of pink colored, knife-edge papillae, and an aesthetically appealing outcome was obtained in the periodic controls. The patient became able to maintain good oral hygiene. In none of the cases any recurrence was observed in the 6th month and periodontal health could be maintained Figure 3.

Discussion

Gingival overgrowth is a major concern both for the patients and physicians, since it is found unaesthetic and leads to the disposition of microbial dental plaque. It is still unknown how drugs may trigger a connective tissue reaction in the gingiva.[1] Based on their clinical actions, anticonvulsants, immunosuppressants, and calcium channel blockers are the three key groups of drugs linked to gingival overgrowth.[2] Antihypertensive drugs such as calcium channel blockers or calcium antagonists are often used in patients with angina or peripheral vascular disease.[2,4] Amlodipine, a calcium channel blocker, has been identified as one of the possible etiological causes of gingival overgrowth.[2,4,6] Three patients with poor oral hygiene experienced gingival enlargement as a result of chronic amlodipine use, according to Seymour et al (at least 3 months).[6] In a study of 911 patients conducted by Ellis et al., 63 percent of those taking nifedipine had gingival enlargement, which was substantially higher than the amlodipine and diltiazem classes.[7] Increased connective tissue matrix is a typical histopathological symptom of all drug-induced gingival overgrowth.[5] Although the connection between gingival inflammation and drug-induced overgrowth is still debated, evidence suggests that local factors and associated inflammation play a role in gingival overgrowth formation.[6,8,9] Bacterial plaque has been related to gingival and periodontal disease, making it a natural target for attempts to avoid or control gingival overgrowth. Not being able to maintain oral hygiene is a problem of the patient, that might require professional help from the dentist.[9] The severity of gingival overgrowth in patients taking these drugs is linked to impaired plaque control and is proportional to plaque-induced inflammation.[7] In our study, regarding the first and second cases, after giving oral hygiene instruction to the patient and applying initial periodontal treatment including regular con-

Figure 1. Case 1- clinical situation at the first visit and 6 months follow-up.

Figure 2. Case 2- clinical situation at the first visit and 6 months follow-up.

Figure 3. Case 3- clinical situation at the first visit and 6 months follow-up.

trols, the current drug was replaced with an alternative drug with physician consultation, and improvement was achieved without additional periodontal surgical procedures. The direct and indirect effects of these drugs on gingival fibroblast metabolism are the subject of current research on the pathogenetic mechanism of drug-associated overgrowth. Treatment focuses on medication replacement and successful regulation of local inflammatory factors like plaque and calculus, if possible.[1] With nonsurgical periodontal treatment and good plaque control, Hancock and Swan were able to achieve a very effective regression in gingival overgrowth.[8] Despite the fact that non-surgical care is effective in the majority of cases, many patients must have their overgrown areas surgically removed for cosmetic and functional purposes. When gingival overgrowth interferes with speech, function, aesthetics, or oral hygiene, it should be surgically removed.[10] External bevel gingivectomy, followed by scaling and root planning, is the traditional surgical procedure for gingival overgrowth care.[8] A complete or partial internal gingivectomy solution, on the other hand, has been suggested as an alternative. By eliminating bare connective tissue damage caused by external gingivectomy, this technically more difficult procedure has the advantage of limiting postoperative discomfort and bleeding.[3,8] Plaque prevention has also been stated to be successful when using chlorhexidine mouthwash and gel.[4] A treatment protocol was applies in the 3rd case, including initial

periodontal treatment and replacement of the current drug with an alternative drug, as mentioned in the first and second cases, and the recovery was achieved to a great extent. However, it was observed that the presence of retention areas had not completely gained their natural physiological form and the patient could reach the formerly inaccessible areas more easily. For this reason, the gingivectomy procedure was applied and the gingiva was shaped, restored to its natural physiological form and the patient could reach the formerly inaccessible areas more easily. The results of our study are compatible with many studies published in the literature that include similar treatment protocols.[2–4,7,11] The limitations of this study are the low number of our cases, the need for additional periodontal surgical procedures for only one patient, and the follow-up period of the patients for 6 months.

Conclusion

One of the common causes of gingival overgrowth is the use of drugs containing amlodipine, which is one of the calcium channel blockers. Gingival overgrowth can make oral hygiene practices difficult, increase bacterial biofilm retention and cause aesthetic problems, therefore needs to be treated. The treatment protocol is followed by a careful patient history and determination of the cause. If the condition is due to drug use, the treatment includes the replacement or discontinuation of the current drug with an alternative drug with the physician's consultation; besides, after the initial periodontal treatment, oral hygiene practices including effective bacterial biofilm controls and regular visits should be done, and in severe cases, periodontal surgical procedures should be made. In this case series, the treatment of gingival overgrowth induced by the combination of amlodipine and bacterial biofilm retention has been demonstrated, based on the clinical results. Treatment not always start with surgery, at times it can be treated simply by controlling bacterial plaque and discontinuing or changing the medication. Nevertheless, physicians should consider alternative treatments such as additional periodontal surgical procedures when necessary.

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This case series were not presented in any previous congress.

Conflict of Interest

Authors declare that they have no conflict of interest.

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