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Case Report

Calcium Channel Blockers Induced Gingival Overgrowth: A Case Report

Amudha D[1], C.D.Dwarakanath[2], Suryaprakash Narayanappa[3], Prasad M.G.S[4], Vinayak R[5]

[1]Senior Lecturer, [4]Reader, [5]Postgraduate Student, Department Of Periodontics, SGR Dental College and Research Centre, Bangalore, Karnataka, India.
[2]Professor and H.O.D, Department of Periodontics, Vishnu Dental College and Hospital, Andhra Pradesh, India.
[3]Assistant Surgeon, Sri Jayadeva Institute of Cardiovascular science and Research Center, Bangalore, Karnataka

Corresponding Author: Vinayak R

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ABSTRACT

Drug-Induced Gingival Overgrowth is matter of concern both for the patient and the clinician. A 55- year old man was referred from Sri Jayadeva Institute of Cardiovascular sciences and Research Center (SJICR), Bangalore to The Oxford Dental College and Hospital to get an opinion about the gingival overgrowth present since 2 years. He complained of esthetically displeasing gingival overgrowth which was interfering with speech and to an access for oral hygiene measures. Patient's medical history and drug history revealed that he was a known hypertensive patient and had been taking a single dose of Amlodipine 2.5 mg per day, orally in the morning since 2 years. On intra-oral examination, localised, firm gingival overgrowth was found on the labial side of maxilla and mandible extending from 13 – 23 and 33 – 43 tooth region. Patient was initially treated with non-surgical therapy and then surgical therapy (gingivectomy) was performed and the excised tissue was sent for biopsy. Based on the clinico-microscopic findings, the lesion was diagnosed as Drug induced gingival overgrowth.

KEYWORDS: Gingival overgrowth, Amlodipine, Hyperplasia.

INTRODUCTION

Gingival enlargement is a common feature of gingival disease and represents an exuberant response to variety of local and systemic conditions. The gingiva and associated soft tissues of the periodontium may be enlarged in response to various interactions between the host and environment. Although such enlargements usually represent an inflammatory response to bacterial plaque, increased susceptibility as a result of systemic factors should always be considered.

Systemically related gingival enlargements include those seen in scurvy, leukemia, puberty, pregnancy, multisystem syndromes and use of selected drugs. The use of drugs and medicaments in the treatment of various medical conditions has reached epic proportions. Unfortunately, in addition to the beneficial effects, these drugs also cause various adverse effects involving organs and systems. [1]

Drugs associated with gingival overgrowth can be categorized according to their respective actions as anticonvulsants, immunosuppressants and calcium channel

blockers. [2] The clinician should be particularly concerned with cases where there is evidence of gingival enlargement because it causes a plaque control problem, may affect mastication, may interfere with speech and may cause esthetic concern to the patient. The medication induced gingival overgrowth occur as a side effect of drugs used mainly for non- dental treatment for which the gingival tissue is not the intended target organ.

Calcium channel blockers are a group of drugs which are widely used in treatment of many cardiovascular disorders including unstable angina, chronic stable angina, hypertension, supraventricular arrhythmias, acute myocardial infarction and ischemic heart disease. The total number of prescriptions of this class of agents has continued to rise in recent years. They have different chemical structures and actions but all are thought to be agonists of the slow calcium channel into cells. These are most commonly used drugs in various clinical situations due easy availability and effectiveness. It has been demonstrated that these drugs have important side effect on the gingiva, principally gingival enlargement. Gingival hyperplasia resulting from the administration of calcium channel blockers has been reported in both medical and dental literature. However, the prevalence of this growth and its relation to age, dosage, duration of intake and oral hygiene have not been adequately addressed.

Gingival overgrowth associated with nifedipine therapy was first reported in 1984 by Lederman and Ramon et al. [1] It is now well recognized that gingival hyperplasia is a rare adverse effect of all three classes of calcium channel blockers, with the impression that it is more common with the dihydropyridine calcium antagonists. It is usually seen within a few months of starting treatment and is reversible after discontinuation of therapy.

CASE REPORT

A 55- year old man was referred from Sri Jayadeva Institute of Cardiovascular sciences and Research Center (SJICR) , Bangalore to The Oxford Dental College and Hospital to get an opinion about the gingival overgrowth present since 2 years. He complained of esthetically displeasing gingival overgrowth which was interfering with speech and to an access for oral hygiene measures.

Patient's medical history and drug history revealed that he was a known hypertensive patient and had been taking a single dose of Amlodipine 2.5 mg per day, orally in the morning since 2 years.

On intra-oral examination, localised , firm gingival overgrowth was found on the labial side of maxilla and mandible extending from 13 – 23 and 33 – 43 tooth region. [1]

Fig 1: Labial view showing generalized gingival enlargement in the maxillary and mandibular arches.

Figure 1 : GINGIVAL ENLARGEMENT.
Labial view showing generalized gingival enlargement in the maxillary and mandibular arches with respect to 13-23 and 33-43 .

The inter-dental gingival was pale pink , pebble shaped and firm in consistency with marked , pronounced stippling in the areas with little evidence of bleeding on probing. Probing pocket depth ranged between 3 - 4 mm and maximum probing pocket depth of 4mm in relation to 31and, 41. Eva Ingles clinical index for drug-induced gingival overgrowth was applied and was grade 2 in relation to upper and

lower anteriors. [2] The Oral Hygiene Index score was 2.9 which was interpreted as fair oral hygiene and plaque index was 1.1 (moderate).

A provisional diagnosis of chronic generalized gingivitis with localized periodontitis was made in relation to 12 ,13 , 21 , 22 , 33 , 41, 42 and 43. And drug induced gingival overgrowth in relation to upper and lower anteriors (11 , 12 , 13 , 21 , 22 , 23 , 31 , 32 , 22 , 41, 42 , 43)

Patient was initially treated with the non-surgical therapy consisting of thorough supra and subgingival scaling followed by root planing. Oral hygiene reinforcement was done and was prescribed with 0.12% Chlorhexidine mouth rinse for 15 days. Patient was recalled after three weeks for follow-up after phase – I therapy.

On recall examination, there was persistent gingival overgrowth in relation to upper and lower anteriors.

After obtaining, an informed consent from the patient, routine blood and radiographic investigations were done. A surgical gingivectomy procedure was carried out under local anaesthesia

Fig 2: The excised tissue was sent for histopathologic examination.

Figure 2: EXCISED TISSUE
Using internal bevel gingivectomy , the overgrowth of gingival tissue is excised from the lower arch for biopsy.

Fig 3: Microscopic examination of the gingival biopsy revealed acanthosis of overlying epithelium and underlying connective tissue showed fibrous hyperplasia with inflammatory component

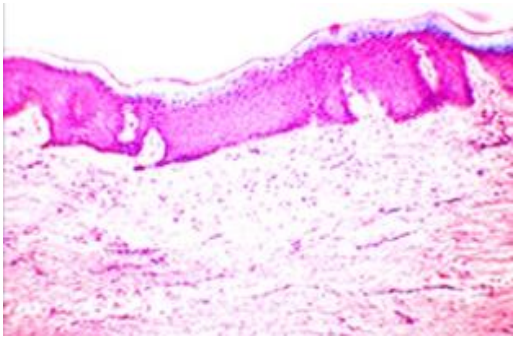

Figure 3 : MICROSCOPIC PICTURE
Histopathologic section showing acanthosis of epithelium , fibrous hyperplasia of connective tissue.

Fig 4: A post-operative picture of excised site after 15 days is shown to evaluate the healing

Figure 4 : HEALING SITE
Photograph showing healing after 15 days in relation to the excised tissue in lower arch

Based on the clinico-microscopic findings, the lesion was diagnosed as Drug induced gingival overgrowth.

Patient was reinforced with oral hygiene measures and was advised to have frequent periodontal checkups. Patient was sent back to SJICR for drug substitution to prevent the possible recurrence of gingival overgrowth and for further medical management if required

DISCUSSION

Calcium channel blockers are a group of drugs which are widely used in treatment of many cardiovascular disorders

including unstable angina, chronic stable angina, hypertension, supraventricular arrhythmias, acute myocardial infarction and ischemic heart disease. Several studies have demonstrated that these drugs have important side effect on the gingiva, principally gingival enlargement / overgrowth. [3,4]

Gingival overgrowth resulting from the administration of calcium channel blockers has been reported in both medical and dental literature. However, most of the data available are from individual case reports and very few epidemiological surveys have been conducted and few systematic reviews are available in this regard. So, this has resulted in the wide variation of the prevalence of gingival overgrowth in patients taking calcium channel blockers which consequently has made it difficult to understand the etiopathogenesis of the condition.

The underlying mechanism remains to be unclear although two main pathways have been suggested namely, inflammatory and non-inflammatory. The proposed non-inflammatory mechanisms include defective collagenase activity due to decreased uptake of folic acid, blockage of aldosterone synthesis in adrenal cortex and consequent feedback increase in ACTH level and by upregulation of keratinocyte growth factor. Alternatively, inflammation may develop as a result of direct toxic effects of concentrated drug in Gingival Crevicular Fluid (GCF) and or bacterial plaques. [4] This inflammation could lead to upregulation of several cytokine factors such as TGF-B1

Previous studies have shown that plaque induced inflammatory changes within tissues will exacerbate the expression of drug induced gingival overgrowth. This finding suggests causality, with the patients oral hygiene being a significant risk factor for both the development and expression of drug induced gingival overgrowth. Literature reveals that gingival overgrowth due to calcium channel blockers administration can exist in the presence or absence of dental plaque, although this factor has the potential to aggravate the effect of drug on gingiva. [5,6]

Although the incidence of nifedipine induced gingival hyperplasia is about 10 % . [7] very few reports of amlodipine-related gingival hyperplasia does exist in extent literature. [7,8] In a series of 150 patients having cardiac problems , it was found that amlodipine at a dose of 5 mg/day cannot induce gingival hyperplasia even if taken more than 6 months. [8] Contrarily , Seymour et al reported three patients with poor periodontal conditions who developed gingival hyperplasia when they used amlodipine for more than 3 months. [7] Surgical reduction of the overgrown tissues is frequently necessary to accomplish an aesthetic and functional outcome. [9] Discontinuation of the related drug has been shown to reduce Gingival Overgrowth , however the growth will recur when the drug was readministered. [10]

The salient feature of this study was that the patient was referred from the outpatient department of Sri Jayadeva Institute of Cardiology, a super speciality tertiary cardiac care centre. Patient's medical and drug history was confirmed by verifying his medical records. Hence, the findings of this case report can be taken as a true representation as often, surveys are conducted on patients who visit dental hospital which could form a bias.

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