

Original research article

PREVALANCE OF AMLODEPINE INDUCED GINGIVAL OVER GROWTH - A PROSPECTIVE STUDY

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ABSTRACT

BACKGROUND: Drug-induced gingival overgrowth (DIGO) remains a significant problem for the dental clinicians and the periodontologists. Patients medicated with certain drugs may be implicated in this unwanted side effect (DIGO), which may interfere with aesthetics, mastication or speech.

AIM; As there are no data or studies available on the prevalence of amlodipine induced gingival overgrowth in this part of country., hence to find out the prevalence of oral diseases in patients with DM this study is conducted .

MATERIALS AND METHODS : All the patients attending medicine op on amlodipine are screened for this study in dental out patient department in government medical college and ESI hospital , Coimbatore between Jan 2018 to Dec 2018 all patients on anti epileptics are excluded from study .

RESULTS : Total number of patients screened 28,736, MALE 19,864 (69%) FEMALE 8,872 (31%) mild gingival over growth ; 27 (male 13 female 14,) moderate gingival over growth ;12(male 4 female 8) ,severe gingival over growth ;8 (male 3 female 5)TOTAL; 47(0.2%) (Male 20 female 27)

CONCLUSION : Amlodipine induced gingival overgrowth is not seen in patients taking 2.5 mg once daily , three patients on 5 mg once daily had mild gingival over growth , the incidence is 45 patients (0.2 %) in patients on 10 mg or more once daily for more than six months.early detection and changing the drugs reverses the gingival overgrowth.

KEYWORDS: amlodipine, ,Gingival overgrowth, gingival hypertrophy

INTRODUCTION

Drug-induced gingival overgrowth (DIGO) remains a significant problem for the dental clinicians and the periodontologists. Patients medicated with certain drugs may be implicated in this unwanted side effect (DIGO), which may interfere with esthetics, mastication or speech. Disfiguring gingival overgrowth triggered by these medications is not only esthetically displeasing but also often impairing nutrition and access for oral hygiene resulting in an increased susceptibility to oral infection, caries and periodontal diseases.

An increasing number of medications are associated with gingival overgrowth. Currently, more than 20 prescription medications are associated with gingival enlargement. Drugs associated with gingival overgrowth can be broadly divided into three categories: Anticonvulsants, calcium channel blockers, and immune suppressants. Although the pharmacologic effect of each of these drugs is different and directed toward various

primary target tissues, all of them seem to act similarly on a secondary target tissue, that is, the gingival connective tissue causing common clinical and histo pathological findings.

Amlodipine is a long acting dihydropyridine calcium channel blocker that is used in the management of both hypertension and angina in dose ranging from 2.5 mg once daily to 10 mg once daily. Ellis *et al.*, first reported gingival sequestration of amlodipine and amlodipine-induced gingival overgrowth. Since then, very few isolated cases of AIGO have appeared in the dental literature although there are numerous reports of nifedipine induced gingival overgrowth till date.

Clinical manifestations of gingival enlargement frequently appear within one to three months, after initiation of treatment with the associated medications. Gingival overgrowth normally begins at the interdental papillae and is more frequently found in the anterior segment of the labial surfaces. Gradually, gingival lobulations are formed that may appear inflamed or fibrotic in nature depending on the degree of local factor-induced inflammation. However, the fibrotic enlargement is normally confined to the attached gingiva, but may extend coronally causing the extensive disfigurement of gingiva. Amlodipine-induced gingival overgrowth (AIGO) can be treated in the following phases: (1) thorough Phase-1 therapy, (2) substitution of the drug, (3) surgical excision of the residual gingival overgrowth and (4) maintenance and supportive therapy.

MATERIALS AND METHODS

All the patients attending medicine OP on amlodipine are screened for this study in dental out patient department in government medical college and ESI hospital, Coimbatore between Jan 2018 to Dec 2018 all patients on anti epileptics are excluded from study.

RESULTS

Total number of patients screened 28,736, MALE 19,864 (69%) FEMALE 8,872 (31%) mild gingival over growth ; 27 (male 13 female 14,) moderate gingival over growth ;12(male 4 female 8) ,severe gingival over growth ;8 (male 3 female 5)TOTAL; 47(0.2%) (Male 20 female 27)

DISCUSSION

'Gingival overgrowth' or 'gingival enlargement' is the preferred term for many of these medication-related gingival conditions previously labeled as *gingival hyperplasia* or *gingival hypertrophy*. These earlier terms do not accurately reflect our current understanding of the macroscopically enlarged and histologically altered gingiva. Drugs associated with gingival overgrowth can be broadly categorized into three major groups according to their therapeutic actions, namely, anticonvulsants, immune suppressants and calcium channel blockers.

The widespread use of calcium channel blockers began in 1980s. The dihydropyridones (e.g. nifedipine) tend to be more commonly associated with the gingival enlargement than with other sub groups of calcium channel antagonists such as amlodipine. Prescription of calcium channel blockers is relatively common, making it difficult to determine the true incidence of drug-induced gingival enlargement.

Amlodipine is a third generation dihydropyridine calcium antagonist, which has a mode of action pharmacodynamically comparable to nifedipine. However, amlodipine has a unique physiochemical profile, which is characterized by near complete absorption, late-peak plasma concentrations, high bioavailability and slow hepatic biodegradation. The associated slow elimination of amlodipine with resulting long duration of its action means that only a single-daily dose is required. This in turn results in better patient compliance and has until now been associated with similar or reduced severity of side effects compared with nifedipine.

CALCIUM CHANNEL BLOCKERS ARE KNOWN to contribute to gingival hyperplasia. The vast majority of reports discuss patients taking the drug nifedipine. During the past few years a newer calcium channel blocker, amlodipine, has been used with increasing frequency. To date, six cases have been published indicating that amlodipine may also promote gingival hyperplasia; however, no data have been reported regarding the prevalence of this phenomenon. The purpose of this study was to examine a large group of patients taking amlodipine and determine the prevalence of gingival hyperplasia.

The difference between nifedipine and amlodipine is of interest, as both drugs are dihydropyridones and hence structurally similar. Also, both are secreted in the gingival crevicular fluid, but differ in their physico-chemical profile. Amlodipine is more polar than the other dihydropyridones, with a pKa value of 8.7. In contrast, nifedipine is intensely lipophilic and will readily dissolve within the cell membrane and pass into the cytoplasm. While the mechanism of drug-induced gingival overgrowth is considered to be multi factorial, the drug/cellular interaction is pivotal in the pathogenesis of this effect.

The clinician should emphasize plaque control as the first step in the treatment of drug-induced gingival enlargement. Although the exact role played by bacterial plaque in drug-induced gingival enlargement is unclear, there is evidence that elimination of local factors and regular maintenance of good oral hygiene decrease the degree and severity of the gingival enlargement and improve the overall gingival health. Usually, a three-month interval for periodontal maintenance therapy has been recommended in DIGO.

The treatment options for drug-induced gingival enlargement should be based on the medication being used and the clinical presentation of the individual case. First, consideration should be given to the possibility of discontinuing or substituting the drug. Either of those scenarios should be examined in consultation with the patient's physician. Simple discontinuation of the offending agent is usually not a practical solution. However, its replacement with another medication might be the practical solution. It may take from 1 to 8 weeks for resolution of gingival overgrowth. Consideration may be given to the use of another class of antihypertensive medications, which are known to be not-associated with the gingival enlargement. In the present case, substitute drug, that is, Normadate 100 mg along with Phase-1 therapy resulted in clinically significant improvement in six weeks time.

The need for, and timing of, any surgical intervention needs to be carefully assessed. Surgery is normally performed for cosmetic/aesthetic needs before any functional consequences are present. The classical surgical approach has been the external bevel gingivectomy. However, a total or partial internal gingivectomy approach has been suggested as an alternative. In the present report, as the gingival overgrowth was not associated with the true periodontal pockets and the osseous defects, external bevel gingivectomy followed by gingivoplasty was carried out. The postoperative results were found to be extremely satisfactory both esthetically and functionally.

DEMOGRAPHIC DETAILS:

| Characteristics | Category | Frequency |
|--------------------------------------|-------------|----------------|
| Age (years) | Below 30 | 2172 |
| | 31--40 | 13479 |
| | 41-59 | 11594 |
| | ≥ 60 | 1491 |
| Gender | Male | 19864 (69%) |
| | Female | 8872(31%) |
| Body Mass Index (kg/m ²) | 19-25 | 17816(62%) |
| | >25 | 10920(38%) |
| BRUSHING | ONCE DAILY | 23 563 (82%) |
| | TWICE DAILY | 4,598(16%) |
| | +MOUTH WASH | 58(0.2%) |
| <hr/> | | |
| Other associated Health Problems | DM | 3161(11%) |

Mild gingival over growth 27 (male 13 female 14)
 Moderate gingival over growth 12 (male 5 female 7)
 Severe gingival over growth 08 (male 4 female 4)
 TOTAL; 47 (male 22 female 25) (0.2%)

CONCLUSION

The prevalence of gingival overgrowth induced by chronic medication with calcium channel blockers is uncertain. Although there have been several studies examining this question, the results are conflicting, with previous estimates ranging from 20% to 83%. There have been only 2 studies examining the prevalence of overgrowth induced by diltiazem and amlodipine, with estimates of 74% and 3.3%, respectively. But in our study Mild gingival overgrowth (<1/3 clinical crown) was found in Twenty seven patient, moderate in gingival overgrowth 12 patients, severe gingival overgrowth seen in eight patients, totally 47 patients(0.2) . This is significantly less than rates reported for patients taking nifedipine, and not significantly different from rates previously reported in control groups of cardiac patients not taking calcium channel blockers.

Amlodipine induced gingival overgrowth is not seen in patients taking 2.5 mg once daily ,(11 456) three patients on 5 mg once daily had mild gingival over growth out of of 5,906 , the incidence is 44 patients out of 11,374 in patients on 10 mg or more once daily for more than six months, , totally 47 patients out of 28,736 (0.2 %). early detection and changing the drugs reverses the gingival overgrowth in mild and scaling and

changing the drugs in moderate and surgical correction with changing the drug in sever gingival over growth is the main stay of treatment.

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