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Original Research

Prevalence of drug induced gingival enlargement among patients attending OPD of Department of Periodontia, Patna Dental College & Hospital

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ABSTRACT

Background: Gingival enlargement is an overgrowth or increase in size of gingiva. We planned to assess the prevalence of drug induced gingival enlargement among patients attending OPD of Department of Periodontia, Patna Dental College & Hospital. **Materials and methods:** The study was conducted in the Department of Periodontia, Patna Dental College & Hospital. Patients with gingival hyperplasia reporting to the outpatient department of Department of Periodontia, Patna Dental College and Hospital were assessed. All the results were compiled and analyzed. **Results:** In the present study, 26 patients with gingival hyperplasia were included. The mean age of the patients was 37.21 years. The number of male patients was 12 and female patients were 14. Majority of patients with gingival hyperplasia has severe gingivitis, grade 3 plaque index, and grade 2 gingival hyperplasia. **Conclusion:** Majority of patients have grade 2 gingival hyperplasia and these patients require periodontal attention as soon as possible to minimize damage to the periodontium.

Keywords: Gingival hyperplasia, Gingivitis, Peridontitis

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INTRODUCTION

Gingival enlargement is an overgrowth or increase in size of gingiva. Many types of gingival enlargements have been reported and can be classified according to etiologic factors and pathologic changes as inflammatory enlargement, enlargements associated with systemic diseases or conditions, neoplastic enlargements, and drug-induced enlargement.¹ Drug-induced gingival overgrowth (GO) is a well-known consequence of the administration of some anticonvulsants, immunosuppressants, and calcium channel blockers.^{2, 3} Calcium channel blockers have been widely prescribed for the treatment of various cardiovascular diseases, mostly hypertension.⁴ GO associated with calcium channel blockers was first described in 1984 by Lederman in patients treated with nifedipine.^{5,6} Despite their pharmacological diversity, the three major drugs causing gingival overgrowth, namely; anticonvulsants, calcium channel blockers, and immunosuppressants; have similar mechanism of action at the cellular level, where they inhibit intracellular calcium ion influx. The action of these drugs on calcium and sodium ion flux may

prove to be the key in understanding why three dissimilar drugs have a common side effect upon a secondary target tissue, such as gingival connective tissue. An appraisal of the various investigations into the pathogenesis of drug-induced gingival overgrowth supports the hypothesis that it is multifactorial.^{7, 8} Hence, the present study was conducted to study the prevalence of drug induced gingival enlargement among patients attending OPD of Department of Periodontia, Patna Dental College & Hospital.

MATERIALS & METHODS

The study was conducted in the Department of Periodontia, Patna Dental College & Hospital. The ethical clearance for study protocol was obtained from ethical committee of the institution. For the study, patients with gingival hyperplasia reporting to the outpatient department of Department of Periodontia, Patna Dental College and Hospital. The patients who underwent periodontal surgery in last 6 months, pregnant ladies, patients diagnosed with systemic diseases such as diabetes mellitus, leukemia, or immunity

deficiency disorders were excluded from the study. A written informed consent was obtained from the participating patients. In order to investigate the plaque score and gingival inflammation in the study and control groups, Loe and Silness plaque index (PI) and gingival index (GI) methods were used, respectively. The hyperplasia was graded according to the gingival overgrowth index described by McGaw et al. (1987) as follows:⁹

- 0 = no overgrowth, feather-edged gingival margin
- 1 = blunting of gingival margin
- 2 = moderate gingival overgrowth (<1/3 of crown length) and
- 3 = marked gingival overgrowth (>1/3 of crown length).

The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi-square and Student's t-test were used for checking the significance of the data. A p-value of 0.05 and lesser was defined to be statistical significant.

RESULTS

In the present study, 26 patients with gingival hyperplasia were included. The mean age of the patients was 37.21 years. The number of male patients was 12 and female patients were 14. Table

2 depicts the common grade of gingival index, plaque index, and gingival hyperplasia index in patients with gingival hyperplasia. We observed that majority of patients with gingival hyperplasia has severe gingivitis, grade 3 plaque index, and grade 2 gingival hyperplasia.

Table 1: Demographic details of the patients with gingival hyperplasia

Variables	Number of patients
Number of patients with gingival enlargement	26
Mean age of the patients	37.21
Number of male patients	12
Number of female patients	14

Fig 1: Demographic data

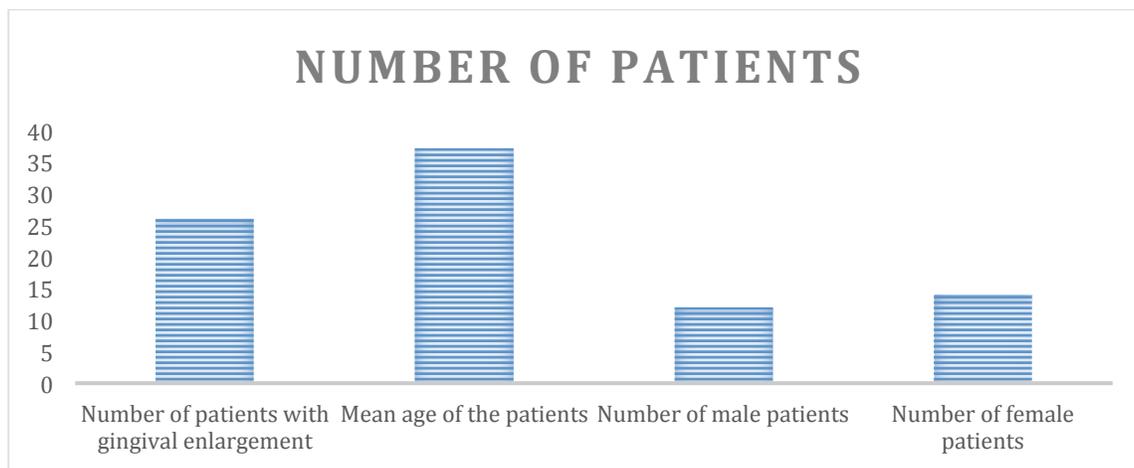


Table 2: Common grade of gingival index, plaque index, and gingival hyperplasia index in patients with gingival hyperplasia

Indices	Grade
Gingival index	Severe gingivitis
Plaque index	Grade 3
Gingival hyperplasia index	Grade 2

DISCUSSION

In the present study, we observed 26 patients with gingival hyperplasia. 14 patients were females and 12 were male. We observed that most common grade of gingival hyperplasia seen in patients was grade 2. Similarly, majority of patients with gingival hyperplasia have moderate gingivitis and grade 3 plaque index. These patients are in severe need of periodontal treatment. The results were compared with previous studies from the literature. Tejnani A et al conducted a study to determine the incidence of

gingival overgrowth induced by amlodipine. Dental patients who received amlodipine (N = 115), for more than 3 months were studied to determine the drug-induced gingival overgrowth. Clinical diagnosis of drug-induced overgrowth was verified by disappearance or decreased severity of gingival overgrowth after withdrawal of the causative drug. The prevalence rate of amlodipine-induced gingival hyperplasia among experimental patients was 3.4%, while it was not observed among the control subjects. Oral examination revealed gingival overgrowth as a lobular or nodular enlargement on interdental papilla located in the anterior interproximal regions. In this study, there was a significant relationship between gingival inflammation resulting from dental plaque and drug dosage, and hyperplasia. Krishna KB et al conducted a study to assess the prevalence of gingival hyperplasia in school going children. A sample size of 1500 was taken. All children who were between the chronological age of 5-12 years from selected schools were included in the study. Three age groups were selected for the study, Group I: 5-7yrs, Group II: 7-9 yrs, Group III 9-12yrs. Each group comprised of 500 students. The examination of gingival enlargement was made according to

Gingival Enlargement Index. The oral hygiene status of the child was examined using Oral Hygiene Index-Simplified. The prevalence of Gingival Enlargement increased with the increase of age. Though the Prevalence of GE in female children (15.1%) was more than male children (13.4%), it was not statistically significant. Female children (1.6%) had a higher prevalence of epilepsy than male children (0.29%) in this present study. They concluded that the prevalence of gingival enlargement was predominantly inflammatory, showing that the oral hygiene status of the oral Children in Karnataka was far from satisfactory.^{10,11}

Karnik R et al determined the prevalence of amlodipine-induced gingival overgrowth (GO) among elderly subjects attending an Indian teaching hospital and find any association with demographic factors, drug variables, oral hygiene status and gingival inflammation. A cross-sectional pilot study included 157 dentate patients aged 60 years or more, taking Amlodipine for at least 3 months. Data were collected from past medical records and oral examination. Clinical assessment of GO was correlated with patient's age, gender, drug dosage (2.5, 5 or 10 mg/day), duration of drug therapy (3-4, 4-6, 6-12, 12-24 and >24 months) and also with subjects' plaque index and gingival index scores. Eight patients (5.09%) had GO. No statistically significant relation was observed between age, gender, drug dosage and duration of drug intake and prevalence of GO. GO prevalence related highly significantly with plaque and gingival index scores. It was concluded that the prevalence of amlodipine-associated GO in the sample of elderly Indian patients was noted higher than that previously reported. Plaque and gingival inflammation were highly correlated with this condition, while demographic characteristics and drug dosage did not relate significantly. Miranda J et al determined the prevalence and risk factors for gingival enlargement in patients treated with diltiazem or verapamil. A cross-sectional study was conducted and data from 46 patients actually taking diltiazem or verapamil were compared with 49 cardiovascular controls that never received any of these drugs. All patients were examined for the presence of gingival enlargement using two different indices, the vertical gingival overgrowth (GO) index, and horizontal Miranda & Brunet (MB) index in the interdental area. Gingival index, plaque index, and probing depth were also evaluated. The total study population was 95:32 diltiazem-treated, 14 verapamil-treated and 49 cardiovascular control subjects. Gingival enlargement occurred in 31% (GO index) and 50% (MB index) of the patients taking diltiazem. Gingival enlargement in the verapamil-treated group was 21% for the GO index and 36% for the MB index. The prevalence of gingival enlargement was higher in the diltiazem- and verapamil-treated patients than in controls for both indices. The difference between the diltiazem-treated group and control was statistically significant ($p=0.022$ for GO and $p=0.001$ for MB), while the difference between the verapamil-treated group and controls was not significant. The risk of gingival enlargement (OR--Odds Ratio) associated with diltiazem therapy was 4.0 (1.2-13.1) for the GO index and of 6.0 (2.1-17.3) for the MB index. When the OR were adjusted for gingival index (GI) values, the risk of gingival enlargement was 3.5 (1.0-12.4) for the GO index and 6.2 (1.9-20.0) for the MB index. In the verapamil-treated group the OR values were not significant. The level of concordance between GO and MB indices in all three groups showed a kappa-value of 0.72. They concluded that the patients taking diltiazem are at high risk for gingival enlargement and gingivitis has a stronger effect than the drug treatment on gingival enlargement risk.^{12,13}

CONCLUSION

From the results of the present study, this can be concluded that majority of patients have grade 2 gingival hyperplasia and these patients require periodontal attention as soon as possible to minimize damage to the periodontium.

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