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Case Report: The case presented here is a 60-year-old female patient with drug induced gingival enlargement. Patient was a known hypertensive and was on medication from past two years. Planned surgical intervention along with full mouth rehabilitation was the chosen treatment strategy. Clinical follow-up period lasted for one and a half years.

Conclusion: With the consent of physician for substitution of the drug along with stringent maintenance of oral hygiene, surgical correction is required, and positive pressure appliance helps in preventing the recurrence of the gingival enlargement.

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CASE REPORT

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Keywords: Amlodipine, Gingival enlargement, Positive pressure appliance

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Received: 21 February 2013

Accepted: 17 June 2013

Published: 01 July 2014

How to cite this article

Sinha A, Oswal S, Shivamurthy R. Amlodipine induced gingival overgrowth: A case report. Int J Case Rep Images 2014;5(7):509–512.

doi:10.5348/ijcri-201490-CR-10401

INTRODUCTION

Defining all the various clinical entities that affect the gingiva as gingivitis is too restrictive and at times confusing. Unlike the restrictive nomenclature of gingivitis, the term “gingival diseases” is a more comprehensive and encompassing definition of the different entities that affect the Gingival. Gingival disease is a diverse family of complex and distinct pathological entities found within the gingiva that are the result of a variety of etiologies. Increase in size of the gingiva is a common feature of gingival disease. Accepted terminology for this condition is gingival enlargement or gingival overgrowth. These are strictly clinical descriptive terms and avoid the erroneous pathologic connotations of terms used in the past, such as hypertrophic gingivitis or gingival hyperplasia.

Various drugs have been associated with an increased prevalence of gingival hyperplasia. The oldest and the most common of these is phenytoin (Dilantin), an anticonvulsant drug commonly used in the treatment of epilepsy. Recently, the number of offending drugs is increasing, with numerous calcium channel blockers, antiepileptic agent, sodium valproate, and the immunosuppressant drug cyclosporine joining the list. Of all calcium channel blocker, nifedipine is correlated with increased gingival hyperplasia most frequently, but an association with diltiazem, amlodipine, nitrendipine, and verapamil also has been shown. Drug-induced gingival overgrowth (DIGO) remains a challenging condition for diagnosis and treatment, the severity of the hyperplasia is correlated directly to the patient's susceptibility and the level of oral hygiene. With excellent oral hygiene, gingival

hyperplasia is reduced dramatically or is not present. Despite this, occasional susceptible patients demonstrate gingival hyperplasia which may interfere with esthetics, mastication, speech and affect access for oral hygiene resulting in an increased vulnerability to bacterial infection, caries and periodontal diseases.

Amlodipine is a dihydropyridine calcium channel blocker that is used in the treatment of both hypertension and angina. Ellis et al., first reported gingival sequestration of amlodipine and amlodipine-induced gingival overgrowth (AIGO) [1], since then, very few cases of AIGO have been reported.

After one month to three months of drug use, the overgrowth originate in the interdental papillae and spread across the tooth surfaces. The anterior and facial segments are the most frequently involved areas. In extensive cases, the hyperplastic gingival can cover a portion (or all) of the crowns of many of the involved teeth. Extension lingually and occlusally can interfere with speech and mastication. Gingival tissue appears pink color or they may be slightly paler than normal. The tissues are firm, hard, and lobulations are formed that may appear inflamed or fibrotic in nature depending on the degree of local factor induced inflammation. Different treatment options that have been explored in the management of DIGO. Such management strategies can most simply be categorized as either non-surgical or surgical approaches. Although a variety of non-surgical measures have been shown to be of some value in the management of DIGO, surgical correction of gingival overgrowth is still the most frequent treatment. Such treatment is only advocated when overgrowth is severe [2]. From the patient's prospective, surgical correction of DIGO should result in little or no postoperative pain or sequelae, good aesthetics and a reduced risk of recurrence. Currently, the surgical management of DIGO includes the scalpel gingivectomy, overgrowth flap surgery, electrosurgery and laser excision.

Electrosurgery techniques have been used in dentistry for the last 70 years. Although such techniques produce adequate hemostasis, they have the disadvantage of causing a surrounding zone of thermal necrosis, which may impede wound healing. This is probably due to the production and accumulation of excessive latent heat, which can be significant if electrosurgery is performed inappropriately. The amount of latent heat produced is dependant upon instrumentation variables, such as type of waveform, size of cutting electrode, time required for incision and the energy produced at operating site. Nevertheless, surgical intervention using conventional means (scalpel) may sometimes be technically difficult and/or impractical for example in children or mentally handicapped, or in patients suffering from impaired hemostasis. In these situations, the use of electrosurgery may be advantageous [2].

CASE REPORT

A 60-year-old female patient was referred to the department of periodontics at Sri Hasanamba Dental College and Hospital, Hassan with the chief complaint of swollen gums in the upper and lower front tooth region from past two months. Patient had noticed a small bead-like nodular enlargement of the gums that gradually progressed to the present size covering almost the entire front teeth in the upper and lower arches (Figure 1). There was no bleeding associated with the overgrowth of the gums. Patient periodontal condition was poor with generalized bone loss and teeth had generalized mobility. Medical history revealed that the patient was hypertensive from last two years and her medication was started four months earlier with amlodipine 5 mg, once daily. Patient did not suffer from any other form of systemic disease. Intraoral examination revealed overgrowth originating from the marginal, interdental and attached gingival extensively covering almost all of the crown of many of the involved teeth. The anterior and facial segments were severely involved areas. Gingiva was pink in color with erythematous area and lobulated surface. Palpation revealed, gingival to be firm and resilient in consistency.

Hypertrophied areas were painless and did not bleed on probing. Inflammatory component of the gingival enlargement was contributed by local irritating factors. Complete blood investigations was done for the patient and all the parameters were found to be within normal range. Patient's physician was consulted regarding substitution of the drug. The physician substituted the with Tab. losartan-H (50 mg). The treatment of the patient was started with full mouth extraction as most of the teeth had poor periodontal prognosis. After full mouth extraction there was a relatively minimal decrease in gingival enlargement. Electrosurgical excision of gingival hyperplastic tissue was planned and performed employing the techniques of gingivectomy to restore the normal shape and contour of the alveolar ridges after a period of one month (Figure 2).

Postoperatively, there was successful elimination of enlarged gingival tissue and restoration of a physiological gingival contour giving the patient an esthetically pleasing appearance to the alveolar ridges. Finally, prosthetic rehabilitation was done for the same patient by constructing complete dentures (Figure 3). Patient was followed postoperatively for a period of one and a half years and no signs of enlargement were reported (Figure 4).

Histopathological report revealed stratified squamous parakeratinized epithelium covering a fibrocellular tissue. The underlying connective tissue shows abundant collagen fibers admixed with spindle shaped fibroblast. Dispersion of numerous inflammatory cells throughout the connective tissue was evident (Figure 5). On the basis of the patient's history and clinical features, a clinical diagnosis of amlodipine induced gingival overgrowth (AIGO) was made.

DISCUSSION

Drug induced gingival overgrowth refers to an abnormal growth of the gingival tissue secondary to use of a systemic medication. The term is a misnomer because neither the epithelium nor the cells within the connective tissue exhibit either hyperplasia or hypertrophy. The increased gingival size is due to an increased amount of extracellular matrix, predominantly collagen. Therefore, it is designated as DIGO. The dihydropyridones (e.g., nifedipine) tend to be more commonly associated with the gingival overgrowth than with other sub groups of calcium channel antagonists such as amlodipine. It has a mode of action pharmacodynamically similar to nifedipine. However, amlodipine has a distinctive 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 results in better patient compliance and has until now been associated with similar or reduced severity of side effects compared with nifedipine [3, 4].

The prevalence rates of gingival overgrowth has been reported in 15–83% of patients taking nifedipine [5], whereas the occurrence rate for amlodipine enlargement is very rare. Patients taking nifedipine appear to be at increased risk for developing significant overgrowth than those on amlodipine. The difference between nifedipine and amlodipine is of interest, 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 multifactorial, the drug-cellular interaction is crucial in the pathogenesis of this effect [6].

The treatment should be based on the medication being used and the clinical appearance of the individual case. Initial consideration should be given to the possibility of discontinuing or substituting the drug. Either of that decision should be taken after consulting with patient's physician. Discontinuation of the aberrant drug is usually not a practical solution. However, its replacement with another medication might be the practical solution. If any drug substitution is attempted, it is important to allow for 6–12 months to elapse between discontinuation of the offending drug and possible resolution of gingival enlargement before a decision to implement surgical treatment is made. As in this case, most of the overgrowth was fibrotic and did not reduce even after full mouth extraction, and the patient had to be rehabilitated with complete denture so as to restore her esthetic and masticatory function, surgical modality was chosen as the treatment option followed by prosthetic rehabilitation.

Emphasis should be made on adequate plaque control as the initial step in the treatment of drug induced gingival overgrowth. Although the exact role played by bacteria

Figure 1: Preoperative frontal, maxillary and mandibular view.

Figure 2: Intraoperative excision of fibrous tissue using electrosurgery.

Figure 3: Postoperative healing after one month and complete full mouth rehabilitation.

Figure 4: Postoperative view after one and half years.

Figure 5: Histology showed parakeratinized epithelium which is hyperplastic in nature, underlying stroma comprising bundles of coarse fibers arranged in wavy fashion. (H&E stain, x40).

plaque in DIGO is doubtful, there is evidence that good oral hygiene and frequent professional removal of plaque decreases the degree of gingival overgrowth present and improves gingival health. Also, adequate plaque control may aid in preventing or retarding the recurrence of gingival overgrowth in surgically treated cases.

In this case, no recurrence of the enlargement after a period of one and, half years can be attributed to the substitution of the drug along with the complete denture acting as a positive pressure appliance (PPA). The effect of PPA in prevention of recurrence of enlargement has been reported in a previous study by Shreidan and Reeve [7]. 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. In this report, as the gingival overgrowth was extensive and relatively minimal decrease in gingival enlargement was seen even after full mouth extraction, hence surgical intervention had been undertaken.

CONCLUSION

With the consent of physician for substitution of the drug along with stringent maintenance of oral hygiene, surgical correction is required, and positive pressure appliance helps in preventing the recurrence of the gingival overgrowth.

Acknowledgements

We acknowledge Dr. Kiran Department of prosthodontics for fabricating complete denture prosthesis.

Author Contributions

Aditya Sinha – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Sheetal Oswal – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Ravindra Shivamurthy – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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