

Phenytoin-Induced Gingival Enlargement: Multidisciplinary Clinical Management: A Case Report

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Abstract

Gingival Enlargement is the most common adverse drug reaction in the young adults and children receiving phenytoin as antiepileptic therapy. Its management requires multidisciplinary approach ranging from simple oral hygiene maintenance to surgical intervention. Frequent recurrences are also seen if not properly treated. This case report documents a case of severe gingival enlargement in a patient under antiepileptic therapy, along with brief review of literature concerning etiopathogenesis and management of the problem. Dentists should be updated and aware of the causative agents of drug induced gingival enlargement and its clinical features in order to prevent, diagnose and successfully treat it.

Key Words: - Gingival Enlargement, Phenytoin, Anti-epileptic drug.

Introduction

Phenytoin an anti-epileptic drug, used alone or in combination with other anticonvulsant drugs is one of the commonest drug used in the management of epilepsy. The reason of its wide spread use can be attributed to its Low cost, availability, frequency of administration and effectiveness.

Side effects include sedation, ataxia, skin rash, agranulocytosis and gingival enlargement (GE). Gingival enlargement is its most frequently appearing dental adverse effect, around 20-50% of patients undergoing treatment with this drug complains with this side effect.¹

The etiopathogenesis of this gingival enlargement still is not clearly understood. Earlier studies have suggested an association of gingival enlargement and multiple anti-epileptic therapies, poor oral hygiene including plaque and calculus accumulation, host genetic predisposition, and altered or more appropriately decreased serum folate levels.²

Management of gingival hyperplasia demands proper understanding and multidisciplinary approach which includes medical, surgical and supportive care. It has been documented that Phenytoin induced GE may improve with substitution of other drugs simultaneous with proper home care, good oral hygiene regimens and surgical excision of hyperplastic gingivae.³

This case series clearly reports the challenges that oral and medical health practitioners face when developing appropriate prevention and treatment programs for epileptic patients, particularly those with periodontal disease, emphasizing multidisciplinary planning for the prevention and treatment of gingival lesions in these medically compromised patients.

Case Report

An 11-year-old male reported to the outpatient department of our institute complaining of enlargement of the gums since 3 to 4 months. Patient suffered from epileptic attacks which started one year back and was advised regular phenytoin medication for control of seizure. Intraoral examination revealed moderate-to-severe overgrowth of a firm, dense and fibrotic consistency that involved both the maxillary and mandibular arches deep pockets throughout

the mouth, and abundant plaque and calculus deposits (Figure 1a & 1b).



Figure 1a: - Intraoral view of the mandibular arch showing severe gingival enlargement of the lingual side. 1b: - Intraoral view of the maxillary arch showing gingival enlargement on both the buccal and palatal side.

The radiographic findings, revealed slight alveolar bone loss with different stages of eruption of permanent teeth. The primary set of teeth is in different stages of exfoliation (Figure 2).



Figure 2: - Orthopantomogram of the patient showing alveolar bone loss at some places and different stage of exfoliation and eruption of the dentition.

On investigation Complete blood count shows Hb 14.1 g/dl, WBC 16.3 /cu mm, Platelets count 3 lakh and liver function test within normal limits. Drug monitoring of Phenytoin showed concentration of 25.71 mcg/dl which is way above the therapeutic concentration of 10-20 mcg/dl.

Medical and dental management:

The patient initially underwent scaling, root planning and oral hygiene instructions. The neurophysician gradually tapered phenytoin over a period of one month replacing it with phenobarbitone. The patient was well compensated showing no episode of recurrent seizure activity. One month later Phase 2 therapy was performed, involving periodontal surgery in all four quadrants utilizing an internal bevel gingivectomy

Histopathological Findings:

Histopathological section stained with haematoxylin and eosin revealed the presence of orthokeratinized stratified squamous epithelium with thin and long slender rete-pegs and with arcading pattern at places. Underlying Connective tissue is composed of dense collagen fibres without inflammatory cells. Overall histopathological features are suggestive of drug induced gingival hypertrophy (Figure 3).

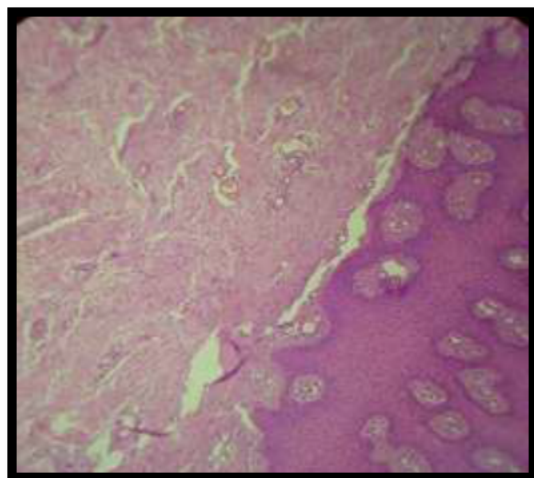


Figure 3: - Histopathological picture of the patient obtained after performing biopsy of the patient. The picture shows arcading pattern and thin slender rete pegs with stratified squamous epithelium.

Discussion

Gingival enlargement in individuals using phenytoin was first described in 1939.⁴ The exact cause by which this medication-induce gum enlargement occurs is still not clear, although a number of theories have been forwarded.⁵ The important factors, which are significant in the development of these gingival changes, are: drug type, inflammatory changes in the gingival tissues due to plaque and genetic mediation of factors – the last one defining the nature and heterogeneity of the gingival fibroblasts.⁶ A combination treatment approach which includes periodontal management and medication substitution is very important for the prevention and successful treatment of phenytoin-induced gingival enlargement.

Clinically gingival enlargement Starts appearing within one to three months after the start of treatment with phenytoin. Gingival hypertrophy starts at the interdental papillae and is

more commonly found in the anterior segment of the labial surfaces. With the intake of phenytoin, gingival lobulations are formed increasing the plaque retentive areas predisposing to the development and/or enhancement of the overgrowth. Disfiguring and enlarged gingivae are esthetically disfiguring and also impairs nutrition and proper oral hygiene maintenance, resulting in an increased susceptibility to oral infection, caries, and periodontal diseases.⁷ many research work have been documented in the past that have demonstrated the usefulness of a preventive periodontal program, taking into the consideration of dental prophylaxis and its application at frequent intervals.⁸

It should be kept in mind that preventive care should be accompanied as soon as the phenytoin therapy is initiated and special consideration should be given in those cases when attachment loss of periodontium is present, because enlargement of gingiva can be managed easily but, loss of alveolar bone is an Irreversible phenomenon which further leads to, derangement in the tooth supporting apparatus permanently. With the introduction of new antiepileptics such as gabapentin, sulthiame, and topiramate the options for phenytoin substitution has increased to a large extent. Reducing the dose of the drug or suppressing it and substituting another are the logical options for controlling gingival enlargement induced by antiepileptic drugs.⁹

In the present case, the patient's neurophysician replaces phenobarbitone as a substitute for phenytoin. Phenobarbitone is the hallmark of a commonly prescribed alternative anti-epileptic medication to phenytoin; gingival enlargement to phenobarbitone occurs very rarely and is very mild if at all it comes as side effect. Phenytoin withdrawal combined with scaling / root planning reduces the gingival enlargement and inflammation significantly in this patient; nevertheless, surgical excision was needed to remove the residual gingival overgrowth. The flap surgery and gingivectomy are the recommended procedures for removing remaining excess tissue keeping in mind the patient's risk status and prognosis. Post surgically, the healing was uneventful and considerable amount of decrease or suppression of the initial condition (gingival suppuration, bleeding on probing, gingival hyperplasia, and periodontal pockets) was achieved.

The patient was placed on a strict maintenance and follow-up program to prevent recurrence of the condition and hyperplasia. A three month follow up is generally recommended for patients taking drugs associated with gingival enlargement.¹⁰

The maintenance program consisted of informing patients of the risk of developing GE secondary to Phenytoin therapy. Role of oral hygiene maintenance in minimizing complications should be stressed at regular intervals. Routine dental examination is recommended to control development of dental plaque which is a major predisposing factor.¹¹

Conclusion

Current researches on the etiopathogenesis of drug induced gingival hypertrophy are concentrated on the direct and indirect mechanism of these drugs on fibroblast metabolism in gingiva.

The main stay of the treatment includes drug substitution, proper oral hygiene maintenance decreasing the inflammatory factors such as plaque and calculus. Surgical care is needed in moderate to severe cases which do not resolve even after decreasing the dose of the offending drug. The importance of oral hygiene in preventing this adverse drug reaction should not be under rated as this is probably the best, cheapest and practical option.

The present case reinforces the need for multidisciplinary treatment care and more rational anti-epileptic therapies.

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