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Case Report

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Dental management of a child patient with phenytoin-induced gingival overgrowth: report of a case with a brief review of literature

Abstract

Drug-induced gingival overgrowth is medication-related gingival overgrowth commonly associated with certain systemic medications. Gingival overgrowth is a common adverse effect of phenytoin therapy. The condition is more frequently seen in children as compared to adults, affects both genders equally, and may vary from mild to severe. It may be associated with difficulty in mastication, delayed eruption of teeth, tissue trauma, and secondary inflammation. It can be managed by both surgical and nonsurgical therapies. A case of dental management of phenytoin-induced gingival enlargement in a 7-year-old girl is presented with a brief literature review.

Keywords: drug-induced, phenytoin, gingival overgrowth, children, management

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Introduction

Drug-related gingival hyperplasia is an abnormal growth of the gingival tissues secondary to the use of a systemic medicine. Gingival hyperplasia is a common side-effect of phenytoin, a major anticonvulsant drug useful in the treatment of epilepsy. It is seen due to the harmful effect of chronic phenytoin therapy and was first described by Kimball in 1939.[1] It is more commonly seen in children as compared to adults and affects both genders equally.[2] Histologically, elongated retepegs are present in the overlying surface epithelium along with an increased amount of fibrous connective tissue in lamina propria.[3] There is the presence of increased vascularity and chronic inflammatory cellular infiltrate consisting of lymphocytes and plasma cells in patients with secondary inflammation.[3] The pathogenesis is multifactorial and is thought to result from complex biological mechanisms.[4] The paper reports a case of dental management of phenytoin-induced gingival overgrowth in a 7-year-old child patient with a brief literature review.

Case report

A 7-year-old girl reported to the Department of Pediatric and Preventive Dentistry with the chief complaint of pain in the front upper teeth region while chewing along with delay in tooth eruption of maxillary incisors. The medical history of the child patient revealed previous episodes of epileptic convulsions. On general examination, the patient was healthy with a normal gait. A thorough intraoral examination showed the presence of gingival swelling in the maxillary and mandibular arch that was non-tender and did not bleed on probing (Figure 1). On clinical examination the swelling appeared non-inflammatory and fibrous.

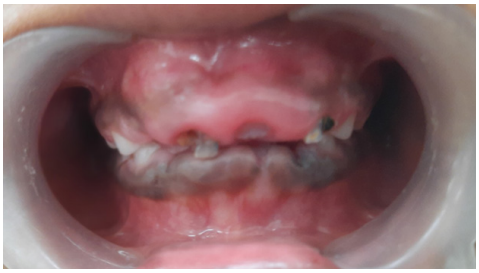

Figure 1 Intraoral image.

The parents of the child patient gave a history of phenytoin intake from the last 1 1/2 -2 years. A diagnosis of phenytoin-induced gingival enlargement was confirmed. A thorough general examination was carried out to rule out the presence of any associated syndrome or disease.

Investigations

An Orthopantomogram radiograph was used to confirm the presence of grossly decayed primary maxillary right and left central incisors as the patient did not give consent for periapical radiography (Figure 2).

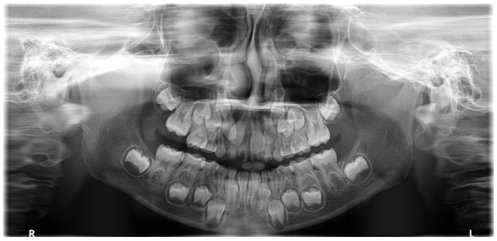

Figure 2 Orthopantomogram of the child patient showing grossly carious primary maxillary central incisors.

Treatment

The primary maxillary central incisors were extracted under local anesthesia (Figure 3). Conservative therapy in the form of scaling of teeth along with oral hygiene instructions was used. The postoperative instructions were explained to the patient and the parents and medications were prescribed.

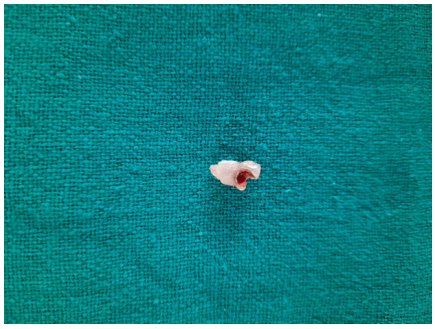

Figure 3 Extracted primary tooth.

Outcome and follow-up

The patient was recalled after 7 days to check healing. The healing was uneventful. The patient was kept under observation and recalled after 1, 3, 6, and 12 months. The patient was asymptomatic on follow-up visits.

Discussion

Epilepsy is a term applied to recurrent seizures, either of unknown origin i.e. idiopathic epilepsy, or due to congenital or acquired brain lesions i.e. secondary epilepsy. It is a neurological disorder and is associated with several comorbidities.[5] Anticonvulsant drugs are mainly used for epilepsy treatment.[5] Gingival overgrowth is a common adverse effect of phenytoin therapy having esthetic relevance in developing countries.[6] Other medications reported to be associated with gingival hyperplasia include anticonvulsants, calcium channel blockers, cyclosporine, erythromycin, and oral contraceptives.[3] Gingival overgrowth has been strongly associated only with phenytoin, cyclosporin, and nifedipine.[3] Recently, it has also been reported with the use of levetiracetam, a newer generation antiseizure medication.[7]

Phenytoin-induced gingival enlargement is generalized in the dentate regions of the oral cavity, begins to appear 2-3 weeks after the intake and peaks at 18-24 months, and is greatest in the labial aspect of maxillary and mandibular anterior teeth.[8] Although an uncommon case involving predominantly the hard palate and floor of the oral cavity has also been reported.[9] The initial clinical appearance is a painless enlargement of interproximal gingival.[8] Phenytoin-induced gingival overgrowth may be associated with difficulty in mastication, impairment of speech, delayed eruption of the tooth, swallowing difficulties, tissue trauma, secondary inflammation, and aesthetics in children depending on the severity of gingival overgrowth.[8,9] In the present case, the child patient had a complaint of discomfort while chewing and delayed eruption of teeth of maxillary incisor teeth.

The pathogenesis is multifactorial. It results from complex biological mechanisms including altered connective tissue turnover, inflammation, and disturbance of the sub-population of gingival fibroblasts.[6] Some undesirable effects of phenytoin that may be responsible for gingival overgrowth are depletion of folic acid levels, adrenocortical suppression, alterations in calcium metabolism, and immunosuppression.[4,6]

Defective mineral metabolism might alter the developing dental tissues and can lead to irreversible defects in dentition in a child patient with long-term phenytoin therapy.[5]

There is no definitive cure for gingival overgrowth and the treatment recommended is often symptomatic. Moreover, it has been reported that the use of antihistaminics, topical antibiotics, topical steroids, Vitamin C supplements and alkaline mouthwashes is ineffective. [8] However, there is evidence that oral folic acid supplementation decreases the incidence of phenytoin-induced gingival enlargement.[6]

Various gingival resection techniques have been specifically used for pediatric patients with phenytoin-induced gingival overgrowth including gingivectomy with periodontal knives, electrosurgery, laser therapy, and internal bevel flap surgery.[8] Every procedure has its advantages and disadvantages, and the choice of surgical approach mainly depends on the degree of gingival overgrowth, the clinician's proficiency, patient's cooperation, and socioeconomic status.[8] Non-surgical periodontal therapy comprising of supra- and sub-gingival cleaning of teeth is effective in reducing the severity of gingival overgrowth and is considered as a suitable alternative to surgical intervention in some cases.[10] Repigmentation of gingival tissues can occur any time between one month and seven years.[11]

Substitution of phenytoin with an effective antiepileptic drug should be considered in consultation with a neurologist as phenytoin therapy affects the quality of life of the child patient.[2]

Good oral hygiene and surgical excision of severely overgrown tissues are most effective in the treatment of phenytoin-induced gingival overgrowth.[8]

Conclusion

Pediatric dentists should make the patient and parents aware of the possibility of gingival overgrowth as an adverse effect of phenytoin therapy. It may be associated with difficulty in mastication, speech impairment, disturbance in calcium homeostasis, and delay in tooth eruption. Hence, regular calcium monitoring is mandatory in pediatric patients with epilepsy. Treatment objectives should include gingivectomy in severe cases of gingival overgrowth. Key to successful therapy is the maintenance of oral hygiene and regular dental check-ups in epileptic children. An alternative drug to phenytoin can be prescribed in consultation with the neurologist if the overgrowth recurs.

Acknowledgements

None

Conflicts of interest

The author declares no conflicts of interest.

Patient consent

Obtained.

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