Case Report

Prednisolone Induced Gingival Enlargement: A Rare Case Report

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Drug-induced gingival overgrowth commonly occurs as an adverse effect of using drugs like calcium channel blockers, immunosuppressants, and anti-epileptics. Usually, among immunosuppressants, cyclosporin is the most common cause of gingival overgrowth. But this case report illustrates a rare gingival overgrowth caused by prednisolone, which may be the first of its kind. Gingival overgrowth can be treated with a multiplicity of therapeutic options like gingivoplasty and/or gingivectomy by using a scalpel or electrocautery. Other contemporary therapeutic options like lasers and cryosurgery have gained prominence lately due to fewer post-operative complications. Amid various novel approaches, lasers have demonstrated better healing and enhanced aesthetic outcomes, making lasers an ideal treatment option for gingivoplasty/gingivectomy in cases of gingival hyperplasia.

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Introduction

Gingival enlargement or gingival overgrowth is characterized by an increase in the size of the gingiva. There are many types of gingival enlargements, such as inflammatory gingival enlargement, drug-induced gingival enlargement, hereditary gingival fibromatosis, and gingival enlargement associated with systemic disease. [1]

Drug-induced gingival overgrowth (DIGO) occurs as an abnormal growth of the gingiva in a localized area or as generalized overgrowth due to the adverse effect of a few systemic drugs. [2] There are many factors associated with DIGO, such as age, poor oral hygiene, and genetic predisposition,[2] Drugs associated with gingival hyperplasia are immunosuppressants (corticosteroids), calcium channel blockers, and antiepileptic drugs. Long-term use of corticosteroids has been associated with drug-

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induced gingival overgrowth, leading to increased bone loss, decreased collagen production, and stimulation of the inflammatory process in the periodontium.[3] Immunosuppressants like cyclosporine (44.9%), everolimus (4.2%), and sirolimus (6.6%) were reported to cause gingival overgrowth. [4] Corticosteroids are usually prescribed in organ transplant cases to prevent organ rejection, in autoimmune diseases like rheumatoid arthritis, and also in severe cases of reactive arthritis. [1]

Reactive arthritis (ReA) comes under spondyloarthritis. It is an inflammatory reaction secondary to gastrointestinal or genitourinary infections.[5] Patients with reactive arthritis present with oligoarthritis of joints, enthesitis, cardiac abnormalities, and oral manifestations including aphthous ulcers. [6] Treatment modalities for ReA include antibiotics, nonsteroidal anti-inflammatory drugs (NSAIDs), disease-modifying antirheumatic drugs (DMARDs), corticosteroids, and tumor necrosis factor-alpha antagonists.[6] In the case of moderate to severe ReA, systemic corticosteroids seem to be efficient in treating peripheral articular symptoms. [7,8] Prednisolone is a potent corticosteroid in treating ReA. The present case report illustrates a rare case of prednisolone-induced gingival overgrowth in reactive arthritis patients.

Case report

A 23-year-old male patient reported to the department of periodontics with a chief complaint of swollen gums in both the upper and lower anterior and posterior tooth regions for 6 years. The patient also reported bleeding while brushing. Medical and drug history revealed that the patient had a history of reactive arthritis and used prednisolone (Omnacortil 4 once daily) for 2 months in a tapering dose (20mg, 15mg, 10mg, for 10 days each respectively, and 5mg for 1 month) and was using the medication periodically contingent on the symptoms of arthritis for 1 year. On clinical examination, generalized fibrotic gingival enlargement was seen in both the upper and lower jaws. In the maxilla, gingival overgrowth covering 1/3 of the crown, and in the mandible, overgrowth covering 2/3 of the crown, is appreciated. Gingival examination revealed a firm, nodular, purple-brown (puce) colored enlargement involving the interdental papilla, marginal gingiva, and attached gingiva. The oral hygiene condition revealed plaque and calculus associated with generalized bleeding on probing. Complete hemogram values were within the normal limit, and on clinical and radiographic examination, mild periodontitis is conceded along with grade-3 gingival overgrowth according to the 1994 Bokenkamp classification. Based on comprehensive medical history, local examination, and complete blood picture, a provisional diagnosis of prednisolone-induced gingival enlargement was made.

In the course of the treatment plan, oral prophylaxis was performed to remove local irritants. The patient was advised to use 0.2% chlorhexidine mouthwash (10mL bid for 7 days) twice a day. The patient was also instructed to maintain good oral hygiene and was recalled after 1 week. Scaling and root planing (SRP) were done to remove subgingival deposits, and the patient was recalled after 1 month. Clinical examination revealed a amiable reduction in the gingival overgrowth, but fibrotic pseudopockets were still persistent. For congenial aesthetic results, the surgical phase of treatment was attempted to remove gingival hyperplastic tissue by employing gingivectomy along with gingivoplasty in an elective approach with an 810nm diode laser (Novolase ^{TM}). Patient follow-up was done at 1 week, 3 months, and 1 year, respectively.

Histopathological examination of the specimen under a microscope using 10x magnification with hematoxylin and eosin staining shows hyperparakeratotic epithelium with long rete pegs. In the connective tissue stroma, focal areas show deposition of abundant collagen fibers associated with fibroblasts. Other focal areas presented a dense chronic inflammatory infiltrate with abundant vascularization.

Discussion

Treatment for DIGO includes initial oral prophylaxis followed by scaling and root planing. If gingival overgrowth subsides after the initial therapy, there is no need for further treatment. If it doesn't subside after initial therapy, various treatment modalities like drug substitution and simple gingivoplasty/gingivectomy can be done based on the extent of overgrowth with a scalpel, electrocautery, cryosurgery, and lasers.

To overcome post-operative complications, lasers are the prime choice because of their known advantages like good healing, less post-operative pain, aesthetics, good contouring, and less scarring. So, in this case report, an 810nm diode laser is used in treating prednisolone-induced gingival overgrowth.

Laser dentistry is a modern innovation that has gained popularity in recent times due to patient comfort and potential advantages like less bleeding, less pain, and improved healing. There are many types of lasers, one of which we are going to discuss here is the semiconductor laser or diode laser. The semiconductor laser is being used extensively as it is economical, highly efficient, and reliable with convenient ergonomics. [7] Their smaller size and high energy density make them useful in medical procedures. [7] Diode lasers have applications as bio-stimulation devices (soft lasers) and also as surgical

lasers (hard lasers). [7] There are various applications of diode lasers in periodontics like ankyloglossia, vestibuloplasty, gingivoplasty/gingivectomy, frenectomy, pyogenic granuloma, crown lengthening, photobiomodulation (PBM), and photodynamic therapy (PDT).

Normal human gingival fibroblasts proliferate in response to cyclosporine-induced gingival hypertrophy. The increase in collagen observed in gingival overgrowth can be accounted for by cyclosporine-induced suppression of collagenolytic activity inside the gingival tissues.

Its histopathological evaluation reveals distinctly inflamed lesions along with fibrosis. [2]

Microscopic features of this prednisolone-induced gingival enlargement biopsy sample are consistent with the histopathological picture of immunosuppressive drug (cyclosporine) associated gingival enlargement. Even though there are a multitude of factors involved in this case report, like reactive arthritis, use of prednisolone, and age, our interpretation of the pathophysiology is unclear. But interestingly, the findings seem to be confluent with the cytological analysis of cyclosporine-induced gingival overgrowth.

Conclusion

Prednisolone-induced gingival enlargement is a rare case. As per our search in databases like PUBMED, MEDLINE, etc., there seems to be no literature on prednisolone causing gingival overgrowth, and further research, case reports, and retrospective studies should be conducted on prednisolone-induced overgrowth to substantiate the diagnosis and gain a better understanding of the mechanism and pathogenesis.

Figures

Figure 1. Pre-operative picture of gingival overgrowth (front profile)

Figure 2. Pre-operative picture of gingival overgrowth (right profile)

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Figure 3. One-week follow-up picture (front profile)

Figure 4. Three months follow-up picture (front profile)

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Figure 5. Three months follow-up picture (right profile)

Figure 6. One-year follow-up picture (front profile)

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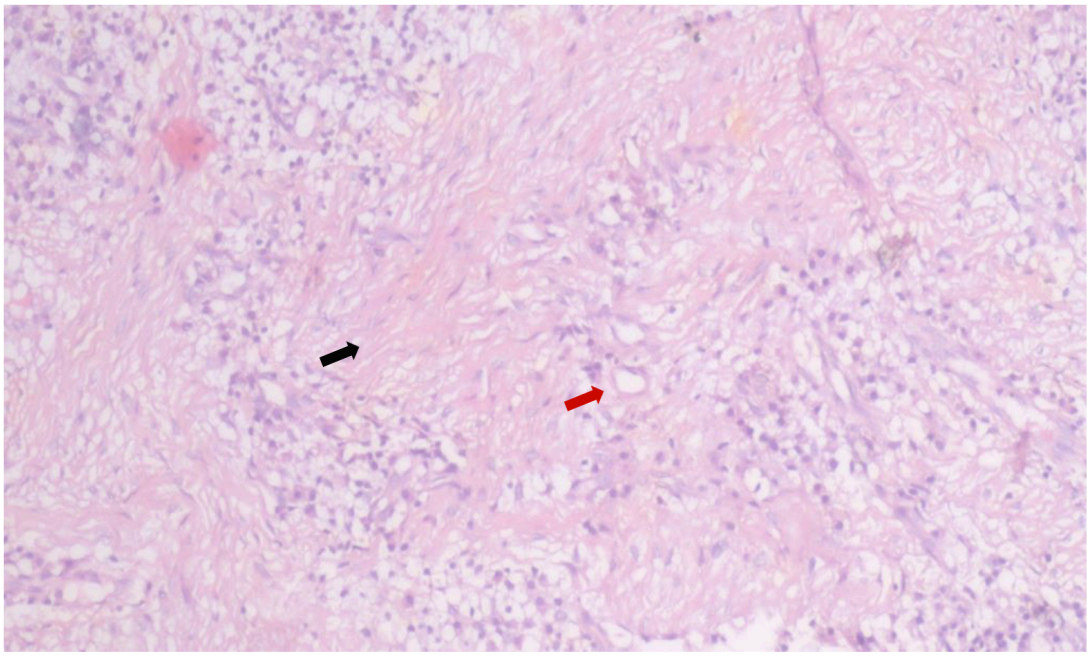

Figure 7. Haematoxylin and eosin (H&E) stained section exhibiting abundant collagen fibers represented with a black arrow and vascularization represented with a red arrow under 10x magnification.

Statements and Declarations

Ethics

Ethical review and approval were waived for this case report, in accordance with local legislation and institutional requirements, as it reports on routine clinical practice.

The patient data presented has been anonymized.

Informed Consent

Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author Contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work.

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Declarations

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