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Management of Aggressive Periodontitis- A Case Report

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Abstract

Aggressive periodontitis generally affects systemically healthy individuals less than 30 years of age. It is distinguished from chronic periodontitis by the age of onset, rapid rate of disease progression, alterations in host immune response, familial aggregation and minimal amount of deposits. It can be localised or generalised depending on the tooth involvement. Management of aggressive periodontitis is a crucial process involving regular maintenance visits. This case report describes the management of a 24 year old male with atypical presentation of aggressive periodontitis during a 6 month follow up visit.

Keywords: Aggressive periodontitis, familial aggregation, host immune response, maintenance.

Introduction

There is always a dilemma in diagnosing and treating patients with severe form of periodontal disease as the prognosis and treatment outcomes depend on it. Aggressive periodontitis (AgP) comprises a group of rapidly progressing forms of periodontal disease that occur in otherwise clinically healthy individuals. Baer in 1971, defined it as " a disease of the periodontium occurring in an otherwise healthy adolescent characterised by a rapid loss of alveolar bone about more than one tooth of permanent dentition". In 1989, World Workshop in Clinical Periodontics catagorized this disease as localised juvenile periodontitis. It was American Academy of Periodontology in 1999 which redesignated it as Aggressive Periodontitis. Aggressive periodontitis encompasses rapidly progressive forms of periodontitis and is characterized by severe destruction of periodontal ligament and alveolar bone occuring in otherwise systemically healthy individuals. It is characterized by a rapid loss of clinical attachment and alveolar bone and normally affects young adults.[1,2]The three features that includes rapid attachment loss and bone destruction that occurs early in life, circumpubertal appearance and familial aggregation are contemplated to be the primary features of Aggressive periodontitis .[3]

In the Workshop for a Classification of Periodontal Diseases and Conditions, the secondary features of aggressive periodontitis were identified as (i) relatively low amounts of bacterial deposits despite severe periodontal destruction, (ii) presence of hyper-responsive macrophage phenotypes, and (iii) increased portions of Aggregatibacter actinomycetemcomitans and Porphyromonas gingivalis.[3]

Patients with aggressive periodontitis are often diagnosed to have a localized form or a generalized form of disease. The localised aggressive periodontitisis(LAgP) characterised to have the relative lack of clinical inflammation, often associated with the localized molar-and- incisor form of aggressive periodontitis, associated with a thin biofilm that rarely mineralises to form calculus with robust antibody response. In contrast, the presence of clinical inflammation in generalized aggressive periodontitis (GAgP) appears to be similar to that observed in chronic periodontitis and it has episodic periods of advanced bone destruction with poor serum antibody response to the periodontal pathogens.It is also becoming more commonly recognized that chronic periodontitis may occur simultaneously with both localized and generalized forms of aggressive periodontitis.[4]

The different treatment phases like systemic, initial, re-evaluation, surgical, maintenance and restorative are similar for both types of periodontitis. For a proper diagnosis, a thorough review of the patients' medical history, medications, family history and social history is required. In addition to this, screening tests can be performed to establish systemic modifying factors such as diabetes and hematological conditions. Furthermore, risk factors, such as smoking and stress, must be identified. Additionally, radiographic analysis, are also important for screening and for establishing the proper diagnosis and a differential diagnosis.

The predictability for generalised aggressive periodontitis is generally poor when compared to localised aggressive and chronic periodontitis in younger individuals.

This case report highlights an case of a 24 year old male patient who reported with mobility with respect to posterior teeth and clinical attachment loss with respect to majority of the teeth . On clinical examination a provisional diagnosis of aggressive periodontitis was given based on the AAP classification 1999. Hence the various treatment strategies were performed based on the provisional diagnosis.

Case Report

A 24 years old male patient reported to the Department of Periodontics with the chief complaint of mobile tooth on the mandibular left posterior region for a period of six months. The patient gave no history of any previous dental treatment. Patient did not report any relevant family history. There were no abnormalities detected in extra oral examination . Clinical examination of the periodontium revealed reddish gingiva with exaggerated scalloping with respect to lower anteriors , soft and edematous in consistency with absence of stippling, fair oral hygiene with full complement of teeth and generalised exudation. On intraoral examination, a mean probing depth of 8 + 0.2mm was found in majority of the teeth with generalised bleeding on probing. Clinical attachment loss was recorded for all the teeth and was found to be 7+ 0.56 mm was observed in most of the teeth. Grade I mobility with respect to 34,35,43 and grade II mobility with respect to 36 were recorded. Radiographically, OPG revealed generalised angular bone loss and arc shaped bone loss with respect to 36. Hematological examinations were within normal limits. Based on the history, clinical and

radiographic findings, a provisional diagnosis of generalised aggressive periodontitis was made.

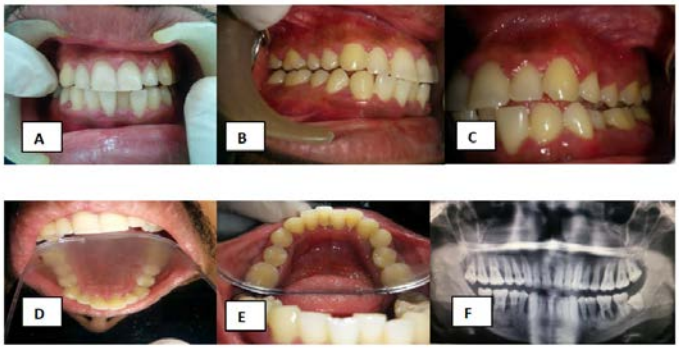

Figure 1. Pretreatment .**A**. Labial view. **B, C.** Lateral view. **D**. Maxillary palatal view **E.** Mandibular lingual view. **F**. Pretreatment OPG

Management

The various treatment modalities include, initial phase of patient education and ensuring patient compliance, active periodontal therapy that includes non surgical therapies such as scaling and root planning, systemic antibiotics and local antimicrobials. The surgical treatment includes, access surgery, regenerative surgeries including bone grafting, guided tissue regeneration using membranes, biological modifiers .Maintenance therapy is a prerequisite for every procedure performed for proper clinical evaluation and improvements benefited from the various treatments.[3]

Preparatory phase during the first visit, phase I therapy which includes thorough scaling and root planing was carried out and the patient was motivated to maintain good oral hygiene . A sulcus brushing technique(modified Bass technique) was demonstrated. Patient was prescribed with 0.2% chlorhexidine mouthwash to further aid in plaque control and was recalled after 10 days. After ten days of follow up ,inflammation had subsided and periodontal recording which includes the probing pocket depth (PPD) and clinical attachment loss (CAL) were measured again. On reevaluation, a reduction in probing depths compared to baseline was seen and the patient was scheduled for a quadrant-wise full-mouth flap surgery at intervals of two weeks which included bone grafting in relation to the molar regions which had predominantly vertical or intrabony defects. During surgical phase, a preprocedural rinse with antimicrobial agent was done to minimize the bacterial count in the mouth. After administering adequate local anesthesia, sulcular incisions were given in the first quadrant and an envelop flap was raised to 1-2mm of the alveolar bone was visible. Soft tissue debridement and scaling and root planning were done. An alloplastic bone graft was placed in 18,15,13 and bone graft along with platelet rich fibrin (PRF) was placed with respect to 43 and 44 by centrifuging 5ml of patient's own blood at 2000 rpm for ten minutes .The PRF obtained was then inserted into the defect in relation to 43 and 44 along with bone graft. Bone graft and GTR membrane were placed with respect to 35 and 36 and thorough scaling and root planning in the second quadrant was performed. Systemic antibiotics (Amoxicillin 500mg thrice daily for 5 days)and pain killer were given to the patient , the patient was recalled at an interval of 10 days for follow up after surgery with respect to each quadrant.

Post operative evaluation

Healing was uneventful, and a postoperative evaluation after one month showed absence of bleeding on probing and soft tissue healing with significant improvement in probing pocket depths and clinical attachment levels .The patient was put on regular recall appointments for evaluation of the gingival and periodontal status and maintenance therapy as a part of supportive periodontal therapy. The oral hygiene maintenance was good, and there were no sign of recurrence of the disease throughout the maintenance period. After three months slight amount of defect fill was observed in relation to mandibular left first molar and right mandibular canine compared to baseline. Reduction in probing depth and clinical

attachment level gain were noticed to be 7 + 0.2mm and 6 + 0.4mm respectively in three months and 6 + 0.3 and 6 + 0.7 mm in six months post operatively but was not significant between third and sixth month period. However patient has been kept on regular follow up.

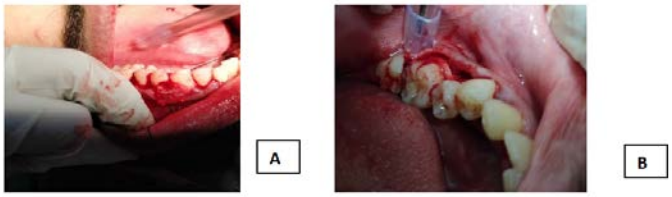

Figure 2. **A**.Placement of PRF in the right mandibular canine region. **B**. Placement of Bone graft and GTR in the left mandibular molar region.

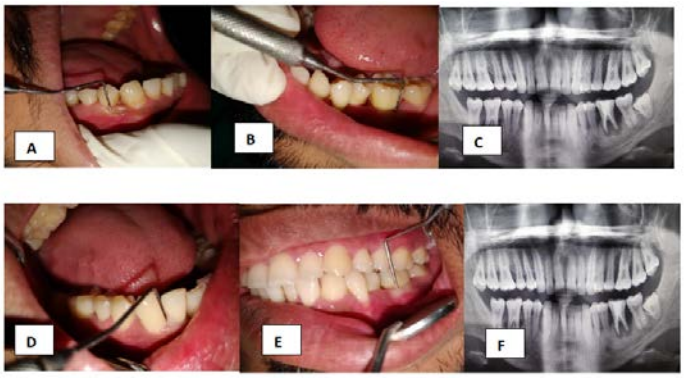

Figure 3. **A,B**. Post operative 3 months.**C**. 3 months post-op OPG .**D,E**. Post operative 6 months. **F**. 6 months post-op OPG.

Discussion

The key to successful treatment is early diagnosis. Early diagnosis helps in prevention of progression of the disease thereby avoiding the possibility of advanced tissue destruction and alveolar bone loss. The persistently high bacterial counts and the presence of periodontal pathogens at surgery adversely affect clinical attachment level gains ,therefore meticulous initial therapy and good oral hygiene are considered to be prerequisites for successful periodontal surgery.

In the present case report it has been investigated that the possibility of using PRF combined with bone graft and bone graft combined with GTR membrane for the treatment of aggressive periodontitis has proven in the successful reduction of probing depths , highlighting the already known use of regenerative processes of these agents in chronic periodontitis. Management of GAgP patients essentially consists of a nonsurgical phase, surgical therapy, an interdisciplinary therapy and a life long supportive periodontal therapy.[5]

The primary feature of aggressive periodontics is the rapid attachment loss with bone loss which was seen in the present case report. Several studies have demonstrated that treatment revolving only around mechanical debridement either in the form of “closed” debridement or access flap technique did not produce satisfactory results leading to progressive attachment loss .[5-7] This was later attributed to the fact that pathogens associated with AgP such as Aggregatibacter actinomycetemcomitans (A.A) can penetrate tissues and therefore never completely eliminated by mechanical therapy alone . Hence synergistic use of suitable antibiotics is used as an adjunct to mechanical therapy. [8-10] Empirical use of antibiotics,such as amoxicillin may be more clinically sound and cost effective than bacterial identification and antibiotic-sensitivity testing as studies conducted to evaluate the effectiveness of microbial testing concluded that the usefulness of microbial testing may be limited. Hence in this case we used amoxicillin antibiotics which gave successful results.

However ,certain cases might require placement of bone grafts and GTR membranes, hemisection, bicuspidisation ,use of PRF etc to save the affected tooth in addition to basic periodontal management. Finally success of any treatment depends on maintenance care and controlling the risk factors of the patients such as smoking, genetic factors and systemic diseases for successful management of Aggressive Periodontitis patients .[5]

In the present case report, typical arc shaped bone loss combined with grade II mobility in relation to 36 was seen which was suggestive of AgP. Moreover vertical bony defects in several areas of the mouth such as 16, 46, 44,43 and 35 were seen which suggests a typical case of GAgP. As AgP is seen in young adults with moderate oral hygiene, this could be consistent with the present case report. Therefore, a conventional approach for the management of 36 using bone graft and GTR membrane was performed.

In the anterior teeth region ,regeneration of combined bone defects is attempted occasionally due to the limited availability of area for regeneration. However this barrier has been prevailed in recent years with the availability of newer regenerative biomaterials such as PRF which can serve as a resorbable membrane . [11]Growth factors released after activation from the platelets gets trapped within fibrin matrix which has been shown to stimulate the mitogenic response in the periosteum for bone repair during wound healing . [5]In comparison to conventional regenerative techniques PRF provides synergistic effect with graft materials and enhances angiogenesis. Concentrated platelets can accelerate tissue regeneration and enhance the quality and quantity of newly formed tissues by functioning as an ideal reservoir for autologous growth factors . A study conducted by Nanditha S et al, highlighted the use of PRF with bone graft in relation to 31 in a localised aggressive periodontitis (LAgP) case where successful bone fill after 6 months was noted in the post operative radiographic examination .[5] Hence the current study emphasized on the successful use of PRF in combination with bone graft in the treatment of AgP with vertical bone defect in relation to 43 and 44 which is in congruence with the previous study .

In a study conducted by Aggour et al. it was demonstrated that PRF has shown favorable results that are comparable to collagen membrane for treatment of intrabony periodontal defects in patients with GAgP.[12]

Recently published studies demonstrated that surgical treatment combined with enamel matrix proteins, bioabsorbable membranes, or bone-grafting materials improved clinical parameters. Careful preservation of interdental tissue, atraumatic flap management, and primary closure of interdental space are essential for the success of regenerative therapy.

In this case , stable clinical periodontal status were seen after conventional periodontal therapy and adjunctive administration of antibiotics after 3 months.

The results from this case reports revealed that the stability of CAL following regenerative therapy depended on maintenance of oral hygiene and compliance of the patient to a recall program. Recall appointments after periodontal therapy play a crucial role during the maintenance period.

Conclusion

Although the prevalence of aggressive periodontitis is very low compared to chronic periodontitis , the management of AgP is challenging as it includes genetic predisposition and unmodifiable risk factors. The diagnosis should be made based on the periodontal condition, which includes the recording of probing pocket depths, clinical attachment levels, bleeding on probing, furcation involvement, suppuration and tooth mobility, and an assessment of the patients' oral hygiene status. Our approach in management of this case was successful as the treatment addressed important key factors such as early diagnosis, elimination of periodontal pathogens and aimed at stability of the affected site through the employed regenerative technique. Thus, understanding the etiology, eliminating the pathogens , controlling the risk factors, meticulous oral hygiene maintenance and proper

recall visits are essential for the management of aggressive periodontitis.

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