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REVIEW ARTICLE

AGGRESSIVE PERIODONTITIS – A REVIEW

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ABSTRACT

Periodontitis is an inflammatory disease which usually affects clinically healthy individuals. The aggressive form, previously known as juvenile periodontitis, affects alveolar bone, connective tissue and tooth supporting tissue. It results in loss of teeth. This devastating loss of esthetics and oral function, affects younger patient's mental health which is treated by invasive and costly treatment such as implants. Recent diagnostic tools and biomarker were proven to minimize the disease progression and limiting it in early stage. Bone augmentation and flap surgery is found to be beneficial and minimized the necessity of dental implants. Recently advanced cone beam computed tomography (CBCT) imaging and analysis of gingival crevicular fluid (GCF) biomarkers are proven as a highly effective diagnostic tool. Recent research about the pathophysiology of the disease, microbial and genetic association is also noticed.

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INTRODUCTION

Aggressive periodontitis is an inflammatory disease which usually affects clinically healthy individuals. This disease affects alveolar bone connective tissue and tooth supporting tissues. This disease is characterized by the rapid loss of attachment and bone loss with minimal amount of microbial deposits. It was first discovered by Gottlieb in 1923 who reported this disease as a diffuse atrophy of alveolar bone (Fine *et al* ,2015). He reported that it was a degenerative, non inflammatory condition. Weinmann and Orban introduced the term periodontosis in 1942, (Orban B *et al*, 1942) 20 years later, it was confirmed that, there is no sign for non-inflammatory condition. Aggressive periodontitis was classified as Generalized and localized form, which was based on the number and type of teeth, affected. Localized aggressive periodontitis usually affects only incisors and first molars. Whereas; in case of Generalized aggressive periodontitis, generalized involvement of teeth is seen.

Clinical features: In case of Aggressive periodontitis females are reported more affected then males. Generally people affected by this disease belongs to the age group from puberty to 20 years of Age Localized aggressive periodontitis usually affects incisors and first molars and it progresses rapidly in all teeth,. Then it is called generalized aggressive periodontitis. Most common clinical feature of this disease is clinical inflammation with presence of deep periodontal pocket and the movability and migration of 1st molars and incisors with minimal amount of microbial deposit (plaque), which mineralize to form calculus. As the disease progresses other symptoms like gingival recession, dull radiating pain, periodontal abscess formation and lymph node enlargement may occur.

Radiographic Finding: Vertical or angular bone loss around 1st molar and incisors are seen. This pattern of bone loss looks like arc shaped loss of alveolar bone, extending from distal surface of 2nd premolar to mesial surface of 2nd molar. Bilateral symmetrical pattern of bone loss is seen called as mirror image pattern.

Pathophysiology: Aggressive periodontitis is characterized by severe bone loss on first molars and incisors and relatively fast progression to second molars. Abnormal root resorption patterns are common in localized aggressive patients with primary dentition (Miller *et al*, 2018). It is also seen frequently in the patients with permanent dentition. Histological features are same as seen during periodontal pocket formation i.e. Ulceration of pocket epithelium, accommodation of inflammatory cells, bacterial invasion of connective tissue that reaches alveolar bone surface. Two types of bacteria are considered to be pathogens in localized aggressive Periodontitis i,e *A. actinomycetumcomitans* and *Capnocytophaga*. Root abnormalities are associated with an increased risk of tooth loss and further progression of this disease process. Inflammatory mediators play a vital part in the

initiation of disease process, and periodontal tissue destruction, modern research confirms significantly higher concentration of IL-1B and MMP-8 of both shallow and deep pockets (Nedzi Gora *et al*, 2017) as well as significantly lower concentrations of IL-17 and IL-23 of in GCF of patients with AgP compared to healthy individuals. (Sadeghir *et al* , 2018) Aggressive periodontitis is clinically correlated positively with clinical attachment loss (CAL) probing depth (PD) and bleeding index (BI). Adjunctive administration of metronidazole and amoxicillin was proven to be more useful in reducing GCF concentration of MMP- 8 compared to the use of photodynamic therapy (PDT) (Skurska A *et al*, 2015). Broad and over usage of antibiotics has led to the emergence of resistant microorganisms, so the use of antibiotics should be minimized Doxycycline and or Lactobacillus brevis CD 2 were shown to have long term positive effect on periodontal and gingival health of Ag P patient (Shah MP *et al*, 2017). Recent studies have revealed that co-administration of symbiotic lozenge with standard therapy is more effective than doxycycline and nonsurgical treatment alone. Clinical parameters such as pocket depth, gingival bleeding and CAL are improved after use of symbiotic lozenge. It has anti-inflammatory and antimicrobial properties which protect the periodontal tissue from destruction and loss of alveolar bone (Murugesan *et al*, 2018).

Diagnosis: Aggressive periodontitis has various clinical features that include distolabial migration, increased mobility of maxillary incisors and first molars, root surface sensitivity severe, acutely inflamed tissue which is often proliferating, ulcerated and fiery red, spontaneous bleeding and suppuration are commonly seen shallow and deep periodontal pockets are seen by probing In such cases some systemic manifestations are seen such as weight loss, mental depression and general malaise Radiography is usually (IOPA &OPG) used to confirm the disease process showing vertical bone loss around the incisors and first molars, in addition to osseous defects wider than those seen in ChP. Recently cone-beam computed tomography (CBCI) was successfully used to diagnose AgP using this imaging tool, detailed examination of each osseous defect around all teeth was carried out measurements of surgically exposed osseous defects by a periodontal probe, which could not be detected by radiography in similar with these detected by CBCT (Mohan R *et al*, 2014).

Treatment Plan

Nonsurgical Treatment: It includes scaling, root planning, curettage, Occlusal adjustment and plaque control, mechanical debridement help to reduce alkaline phosphatase levels in GCF and improve the gingival health and the disease status i.e PD,CAL. Chlorhexidine mouth rinses (0.2%, 10ml) twice daily is prescribed.

Psychotherapy: AgP could have an effect on the mental health of young patients because of changes in esthetics. It is reported that psychological counseling has positive effect on the behavior and attitude of the patients. It is done without medication and with the help of psychotherapy.

Laser therapy: PDT is a new noninvasive therapeutic tool. In such cases combination with scaling and root planning PDT has improved PI, BOP,PPD and CAL.

Medication: As mentioned earlier, amoxicillin and metronidazole are drug of choice. Tetracycline and Doxycycline may also used.

Surgical treatment: It includes flap surgery with or without bone graft, root amputation, and hemisection etc. It is reported that Flap surgery and ridge augmentation result in clinical and microbiological improvements in the patient with AgP. Administration of 0.3% fibroblast growth factor (FGF-2) is proved to be beneficial.

Implant: In recent studies, immediate implant placement is proved to be beneficial after performing extraction and guided tissue regeneration action in a single sitting. Immediate implant placement is done to restore lower anterior incisors and upper right molars. These all implants had marginal bone stability and no residual pockets were observed with any inflammatory condition (Mouchref *et al*, 2018).

Future perspectives: Different types of AgP are characterized by varied patterns of periodontal destruction, which might not be distinct pathologically. In recent studies the role of microorganisms is associated with multiplicity of inherited genes and host response in the earliest stages of disease progression. It is a silent, orphan disease which affects fewer people and clinically represents symptoms unnoticeable by the individual which is treated by reproducible and highly sophisticated technologies that use minimal amount of saliva, plaque and serum/crevicular fluid.

CONCLUSION

AgP is characterized by loss of alveolar bone and tooth supporting tissues, which leads to attachment loss and finally tooth loss. Some pathogens are responsible for the disease i.e. *A actinomycetumcomitans* and *P. gingivalis*. It is also complicated by genetic factors which seem to be linked to host response defects that consequently lead to inability to defend against these pathogens. Radiography and CBCT are used to diagnose this disease. In recent studies it is seen that GCF can diagnose the disease process in early stage. Debridement combined with systematic antibiotics and flap surgeries are used to preserve the compromised teeth, and costly implants are used to replace the hopeless teeth. This disease process affects patient's mental health, so psychotherapy is found to be beneficial.

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