Mini Review Open Access

Microbial Symbiosis and Dysbiosis-an Overview of Dental Plaque

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Abstract

We clinicians assume that the clinical picture of dental disease is a net result of an interaction between the pathogenic dental plaque and host tissue response. Dental plaque biofilm cannot be eliminated. However, the pathogenic nature of the dental plaque biofilm can be reduced by reducing the bio-burden (total microbial load and different pathogenic isolates within that dental plaque biofilm) and maintaining a normal flora with appropriate oral hygiene methods that include daily brushing, flossing and rinsing with antimicrobial mouth rinse. This review] τ ρ ᵐ l M ξ ϰ τ ᵀ ᴰ τ ɲ o-bא l ƀ Dental Sciences & Hospital, Kerala, India, E-mail: arjunjai2002@gmail.com

Received: 26-Mar-2022, Manuscript No: johh-22-58657; **Editor assigned:** 31-Mar-2022, PreQC No. johh-22-58657(PQ); **Reviewed:** 14-Apr-2022, QC No. johh-22-58657; **Revised:** 19-Apr-2022, Manuscript No: johh-22-58657 (R); **Published:** 26-Apr-2022, DOI: 10.4172/2332-0702.1000311

Citation: Chandran N, Arjun MR, Subair K, Mahesh Raj VV, Priscilla Mercy B, Nikitha, Ramana R (2022) Microbial Symbiosis and Dysbiosis-an Overview of Dental Plaque. J Oral Hyg Health 10: 311.

Keywords: Symbiosis; Dysbiosis; Plaque; Microorganisms; Bio lm

Introduction

e oral cavity is a portal for entry of microorganism which alters the immunity of an individual. Oral bacteria are commensals, which become pathogenic in adverse conditions and cause infections [1]. Dental plaque is a structurally and functionally organised bio lm of diverse micro biota [2]. It is a matrix of polymers of bacteria and salivary origin which forms naturally on tooth and defends host by prevention of colonisation of exogenous pathogens [3]. Plaque is natural and contributes to the normal development of the physiology and defences [4].

De nition

A speci c but highly variable structural entity resulting from colonisation of microorganisms on the tooth, restorations or other parts of the oral cavity composed of mucin, microorganisms, desquamated epithelial cells and debris all embedded in a gelatinous extracellular matrix.

Classi cation

Dental Plaque is classi ed into two categories [5].

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microbiota is found a er the emergence, with loss of tooth in old age, some ecological niches such as tooth surfaces and gingival sulcus that favours retention of certain species [6].

Steps in plaque formation

A certain sequence of events is observed in the formation of dental plaque bio lm [3, 5, 11, 12].

Phase 1: Acquired pellicle formation and Transport to the surface

Phase 2: Initial adhesion

Phase 3: Attachment

Phase 4: Colonization and plaque maturation

Acquired pellicle formation and transport to the surface: In the rst phase, acquired pellicle formation is seen when bacterial and host products present in the saliva and gingival crevicular uid come in contact with the tooth surface. In supra-gingival areas, this layer is covered with molecules like salivary glycoproteins, histatin, proline-rich proteins and alpha-amylase. Glucosyl transferases and glycan are also found in the acquired pellicle. Bacteria are transported to the surface of the surface by Random contact– Brownian movement, Sedimentation or active bacterial movement.

unit. In the dental arch, more di erence in plaque growth rate can be detected. Plaque formation generally occurs faster in lower jaw when compared with upper Jaw [3].

as well as modulation of the host. In terms of host modulation, ... facilitates the colonization and growth of other organisms, for example, . . , . , by delaying neutrophil recruitment by transiently inhibiting the initiation of chemokine's like gingival IL8 and T-cell chemokine-like IP 10. It has also shown to a ect the function of neutrophils by activating toll-like receptor (TLR) 2 and C5aR. However, the persistence of . . . . . in the periodontium is dependent on the instigation of incendiary crosstalk seen between receptor of complement C5a and TLR 2 and also the ability of its gingipains to produce C5 convertase activity, which has shown to retard the annihilating ability of leukocytes. is was substantiated by a study in which dysbiosis and periodontitis could not be caused by . . . . . in C5aR sans host (mice) [23-25].

Conclusion

In the view of the foregoing information, it seems appropriate to conclude that the clinical picture of dental disease is a net result of an interaction between the pathogenic dental plaque and host tissue response. Dental plaque bio lm cannot be eliminated. However, the pathogenic nature of the dental plaque bio lm can be reduced by reducing the bio-burden (total microbial load and di erent pathogenic isolates within that dental plaque bio lm) and maintaining a normal ora with appropriate oral hygiene methods that include daily brushing, ossing and rinsing with antimicrobial mouth rinse.

Acknowledgement

I, Dr. Arjun MR am very grateful to Dr. Anil Melath, Professor and head of department periodontics, MAHE institute of dental sciences, and Mr. Ramesh Kumar chairman MAHE institute of dental sciences for the support and nancial aid.

Con ict of Interest

I declare to have no con ict of interest.

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