Republic of Iraq
Ministry of Higher Education
and Scientific Research
University of Baghdad
College of Dentistry

Salivary Lysozyme, Secretory IgA and the Mutans Streptococci Level in Children with Early Childhood Caries

A Thesis
Submitted to the Council of the College of Dentistry at University of Baghdad in Partial Fulfillment of the Requirements for the Degree of Master in Paediatrics Dentistry

By
Dr. Hamsa Thabet Musa
B.D.S.

Supervised by

Assist. Prof.
Dr. Abeer M. Hassan
B.D.S., M.Sc.

Prof.
Dr. Abbas S. Al-Mizraqchi
B.D.S., M.Sc., Ph.D

Baghdad, Iraq
2018 A.D. **1439 A.H**

Abstract

Background: early childhood caries (ECC) is a prevalent disease among preschool children with different etiologic and risk factors. The oral cavity is a competitive environment, that the mutans streptococci (MS) is the cariogenic bacteria to induce the caries process, and the salivary antimicrobial proteins from adaptive immunity like the salivary immunoglobulin A (SIgA), and from innate immunity the lysozyme, that both affect the cariogenic bacteria.

Aims of study: this study was conducted to evaluate the dental caries index (dmfs), with other salivary parameter, the salivary pH, the viable count of mutans streptococci MS, SIgA level, and salivary lysozyme level in children with different stages of early childhood caries, to understand the correlations between these variables.

Materials and methods: 75 children had been categorized into 3 groups according to Wyne (1999): mild, moderate, and severe. The dmfs had been calculated according to WHO (1978), the saliva collection according to Navazesh (1993), salivary pH was estimated, the MS had been calculated after culturing in Mitis Salivarius Agar with the addition of bacitracin to the media (MSB). SIgA and lysozyme ELISA kits had been used to estimate their values. The statistical analysis depends on kruskal-Wallis to compare between the groups, and Man-Whitney U test to compare between each pair of the groups.

Results: the statistical analysis revealed that salivary pH median values was relatively higher in the mild group (8) than in the severe and moderate groups was (7), and no correlations found with the other variables except that with lysozyme which was significant in the total number of the sample. The dmfs increased with the severity of ECC as the median values for mild, moderate, and sever was (1, 20, 24) respectively, the viable count of MS was increased with the caries severity the median values X 10^4 cfu/ml was for mild (10.5), moderate

(160), and for severe (188.45). The same finding for MS count and SIgA that both had significant difference between the groups the mild vs moderate and mild vs severe. Also MS count was correlated significantly with the dmfs at the moderate, and severe groups in addition to the total number of the sample. The SIgA increased with caries severity its median value in µg was for mild (57.73), moderate (88.36), and severe (101.3). SIgA correlated significantly with the dmfs, and highly significant with MS count in the total number of the sample. The lysozyme decreased with caries severity, the median value in ng/ml was for mild (105.07), moderate (77.27), and severe (56.19). The correlation in the total number of the sample revealed to be significant with dmf, and MS count also a highly significant relation between lysozyme and MS count in the mild and the total number of the sample.

Conclusions: Children with different ECC stages having different salivary physical, immunological and non-immunological constituent values against the cariogenic bacteria mutans streptococci, the salivary pH doesn't affect the ECC, while the SIgA secretion induced by the bacterial dose, and the lysozyme that is from innate immunity may play a defensive role against caries in children.