



Correlation of Protein Level with the Severity of Early Childhood Caries–An Observational Study

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ABSTRACT

The present study was undertaken to correlate the serum albumin level with severity of early childhood caries. 56 Children with early childhood caries were recruited from outpatient reporting to the Department of Pediatric and Preventive Dentistry. Oral examination was done. dmft index was scored and severity of ECC was recorded (Wyne's classification). Blood samples were collected by venipuncture and the serum albumin level was estimated. Statistical analysis was done using SPSS vs. 23.0 Mean value of serum albumin level was found to be higher in the children with type 1 (mild to moderate) ECC and lower in type 3 (severe) ECC. Within the limits of our study we found that the relationship between the protein level and the early childhood caries was not statistically significant in this study. However lower serum albumin level was found in the children with type 3 (severe) ECC.

Keywords: Early childhood caries and albumin levels

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albumin level and the severity of early childhood caries.

MATERIALS AND METHOD

INTRODUCTION

ECC is the most common chronic disease of childhood. Apart from the classic etiological triad for caries, it is a complex disease influenced by health determinants and environment. Our understanding of the systemic influence of ECC on overall health is limited. There are studies which support that those with ECC are also deficient in vitamins and nutrients [1]. The uptake of serum albumin by maturation stage rodent enamel results in albumin entering the enamel by extravasations in vivo produces incomplete tissue maturation, resulting in white opaque appearance on eruption [2]. Albumin is a serum protein that can be used as an additional indicator of overall nutritional status and malnutrition [3]. Our department is passionate about childcare; we have published numerous high quality articles in this domain over the past 3 years [4-17]. Hence this study was undertaken to determine the association between the

This observational study was carried out in the department of Pedodontic and Preventive Dentistry of Saveetha dental college, Chennai. Ethical clearance was obtained from the institutional scientific review board SRB/STPG15/41. 56 Children with early childhood caries were recruited from outpatient reporting to the department. Children less than 72 months of age reporting to the department were included in the study. Children with any systemic conditions; usage of prolonged medications; usage of any multivitamin supplementation; medically compromised children are excluded from the study. The data related to the presence of decayed, missing and filled surface (dmfs); decayed, missing and filled teeth (dmft) were recorded and the severity of early childhood caries were assessed based on Wyne's classification [18] (Table 1). After getting concern from the parents, 2ml of blood samples were collected from the participants by venipuncture. Blood samples were collected

Table 1: Wyne's classification.

Type I	Mild to Moderate ECC (Isolated carious lesion(s) involving molars and /or incisors)
Type II	Moderate to severe ECC (Labiolingual carious lesions affecting maxillary incisors with or without molar caries and unaffected mandibular incisors)
Type III	Severe ECC (Carious lesions affecting all teeth including lower incisors)

either from antecubital fossa or metacarpal veins in children by the experienced nurses or lab technicians. The collected samples were kept in the test tubes and were transported to the diagnostic centers on the same day. In the diagnostic center, the serum albumin levels were estimated. Statistical data analysis was performed using SPSS software version 23.0.

RESULTS

The mean value of albumin level in mild to moderate ECC (Type-1) group is 4.57 where as the mean value of albumin level in severe ECC (Type-3) group is 4.39. The mean value of albumin level in moderate to severe ECC (Type-2) group is 4.52 (Figure 1).

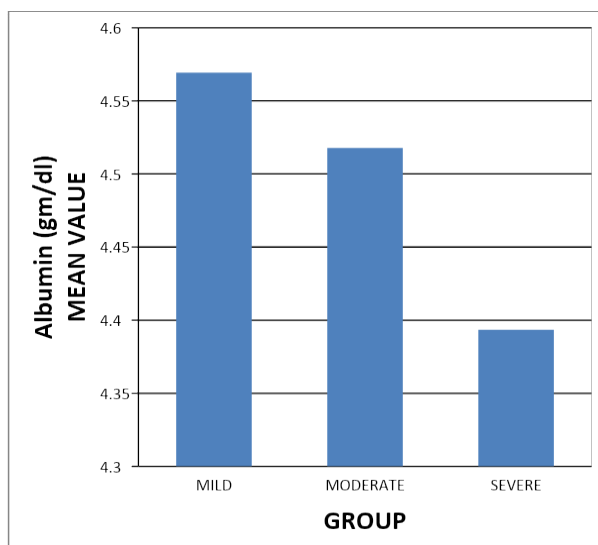


Figure 1: Comparison of albumin level with severity of ECC.

DISCUSSION

The relationship between the protein level and the early childhood caries was not statistically significant in this study. Mean value of serum albumin level was found to be higher in the children with type 1 (mild to moderate) ECC. A study by Schroth et al. [1] concluded that children with S-ECC had significantly lower levels of serum albumin than the children without ECC which is similar to the findings of the present study.

S-ECC seems to be a significant risk factor for the

malnutrition. A deficiency in the serum albumin protein levels in conjugation with undesirable vitamin D, PTH and calcium levels may suggest that the children with severe early childhood caries have nutritional deficiencies [1]. Hence the dentists should consider that children with early childhood caries are at risk for nutritional deficiencies which may affect long-term health and well-being [19].

As far as the author's knowledge, this is the first observational study conducted in Indian population to correlate the serum albumin level with the severity of early childhood caries. Hence, further clinical trials have to be carried out in this research area to support the findings of this study.

CONCLUSION

The relationship between the protein level and the early childhood caries was not statistically significant in this study. In the present study the serum albumin level was found to be higher in the children with type 1 (mild to moderate) ECC and lower serum albumin level was found in the children with type 3 (severe) ECC.

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