



Salivary pH And Salivary Level of Streptococcus Mutans in Beta Thalassemia Major Patients

KEYWORDS

Beta-thalassemia major, salivary pH, salivary S-mutans level.

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ABSTRACT *Objective:*The objective of this study was to find out salivary pH and salivary levels of S-mutans in β -thalassemia major patients and to compare with non-thalassemic controls.

*Study design:*Cross sectional hospital based study where diagnosed cases of β -thalassemia major (TM) were examined during their hospital visits for blood transfusions.

*Participants:*Total of 30 TM patients and 30 healthy controls between age group 6 to 16 years were included in the study.Spontaneous saliva was collected from each patient for the determination of S-mutans count and salivary pH.

*Statistical analysis:*Collected data was analysed by Chi-square test.

*Results:*Presence of salivary levels of S.mutans is found to be more prevalent among TM when compared to normal counterparts.But we could not find any significant difference in the salivary pH levels among thalassemia group and controls.

Conclusion: Salivary S.mutans level is strongly associated with beta thalassemia major patients.

Introduction:

Thalassemia is a heterogenous group of heritable defects in the synthesis of either alpha or beta polypeptide chains of haemoglobin referred to as alpha or beta thalassemia respectively which results in hypochromic anaemias of various degrees of severity. It is one of the most challenging hematologic disorder.Alpha and Beta thalassemia are the two variants of this disorder. Beta Thalassemia is again of 3 types major, intermedia and minor.

The term Thalassaemia is a Greek term derived from 'Thalassa' meaning 'the sea' plus 'emia' 'pertaining to blood'. Thalassaemia is found in around 60 countries which compose the so called Thalassaemia belt². Maldives has the highest incidence of thalassemia, which affects 0.16% of its population and a carrier prevalence of 18% of the population. In India, presence of deficiency anaemia complicates the picture and diagnosis is delayed causing a gradual increase in incidence of inherited disorders. Despite recent improvements, people with these conditions suffer considerable morbidity and have a shorter life expectancy than the general population.

Considering the larger thalassemic population and significant morbidity that are observed in these patients and the smaller number of clinical studies that has been done the present study has been undertaken.This study compared salivary pH and salivary levels of streptococcus mutans between thalassems and non thalassems (healthy controls who are sex, age and nutritionally matched).

Materials And Methods

Institutional Ethical committee of the hospital approved the study and written informed consent was obtained from all the study participants' parents before their examination. Diagnosed cases of β thalassemia major were selected from the hospital records and followed up during their hospital visits for blood transfusions.

A total of 30 beta thalassemia major patients and 30 healthy controls were included in the study.

Selection of saliva for S.mutans count:

Spontaneous saliva were collected from each patient and placed onto the Rondac plates containing *mitissalivarius* agar with Bacitracin (0.2U/ml) and Sucrose (200g/l) selective for mutans streptococci. The agar plates were then transported to Department of Microbiology, Yenepoya Medical College, in an anaerobic gas pack chamber.The plates were incubated for 48 h in anaerobiosis and 24 h aerobiosis at 37°C. Then the colonies with S.mutans morphology were detected and counted (Fig:1).Based on the presence of an estimated salivary S.mutans level of 1×10^4 cfu/ml, the sample population patients were divided into two groups.

Group 1: $< 1 \times 10^4$ CFU

Group 2: $> 1 \times 10^4$ CFU



Fig: 1

Selection of saliva for salivary pH:

Spontaneous saliva were collected from each patient 2 hours after consuming food or drink in a small container and then transported to The Yenepoya Research Centre. Tip of the pH meter's probe was inserted in the container containing recommended amount of saliva and the digital reading was noted (Fig:2). Comparison was done among thalasseemics and non thalasseemics healthy control group.

For the estimation of salivary pH, the sample population was divided into three groups.

- Group 1: salivary pH <6.5
- Group 2: salivary pH 6.5-7.5
- Group 3: salivary pH >7.5.



Fig:2

Results obtained were statistically analysed using Chi-

square test.

Results

Of 30 thalasseemic cases enrolled, 63.3% were males and 36.7% were females. Out of the 30 controls, 66.7% were males and 33.3% were females and the difference is statistically insignificant.

The following table shows distribution of *S.mutans* and salivary pH in both thalassaemics(TM) and the controls.

Table:1

Salivary levels of <i>S.mutans</i>		Thalasseemics	Controls	X_2	p
		Group 1	8/30		
Group 2	22/30	11/30			
Salivary pH	<6.5	3/30	0/30	3.570	.168 NS
	6.5-7.5	13/30	17/30		
	>7.5	14/30	13/30		

Discussion

The present study determined salivary levels of *S.mutans* and salivary pH level in the beta thalassaemia and healthy controls.

Hattab FN et al(2001)³ reported that prevalence of dental caries in thalassaemia were considerably higher (22.7%) than that reported in the normal sample. This finding was similar to Mehdizah M in 2008⁴. However the association of *Streptococcus mutans* with human dental decay is an established finding.

Luglie PF et al⁵ (2002) found that salivary levels of streptococcus mutans were statistically higher in thalassemic-patients. This findings is comparable to the results of our study where p value was 0.004 which suggests high significance of association.

Another feature of the present study was the determination of any association of salivary levels of pH among beta thalassaemia major patients and controls. However no significant association was found among this parameter.

Among the limitations of the present study it has to be mentioned that the patients in this study represent a small sample of beta thalassaemia major groups. Hence further studies involving larger sample size are recommended.

Conclusion

This study provides information regarding salivary levels of *S.mutans* and salivary pH levels in these population sub-groups. However further studies involving larger sample size are needed to ascertain these findings.

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