Comparison of Dental Caries Prevalence in B-Thalassemia Major Patients with their Normal Counterparts in Udaipur

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Abstract: To determine the association, if any, of patients suffering from β-Thalassemia major with dental caries and compare it with their normal counterparts in Udaipur.

Materials and Method: This study was conducted in Rabindra Nath Tagore Medical College and Hospital, Udaipur which included a total of 80 children suffering from β-Thalassemia major and 80 healthy controls (age range 3-17 years). Data was collected from medical records, questionnaires and dental examination. Dental caries was recorded using dmft/ deft Index according to the criteria described by the World Health Organization.

Results: Mean DMFT was found to be 0.50±0.863 among β-Thalassemic patients and 0.16±0.489 among controls whereas deft was 2.02±2.611 and 1.96±3.863 respectively. Mean for DMFT/ deft was found to be 2.37±2.708 in males whereas it was 2.35±2.690 in females.

Conclusion: There was no statistically significant difference in the dental caries status of children with β-Thalassemia major and their normal counterparts and gender had no effect on caries in thalassemic patients.

Keywords: Beta-thalassemia, dental caries, children, gender.

I. Introduction

Thalassemia is considered as the most common genetic disorder world-wide. It was first described by Thomas B Cooley and Pearl Lee in 1925. It has been derived from the Greek word ‘thalas’ which means the sea. It is an autosomal recessive blood disease involving defects in synthesis of α and β polypeptide chains of hemoglobin. Based on their clinical and genetic orders, thalassemias are classified mainly into major (homozygous) and minor (heterozygous) types. Thalassemia major (β-thalassemia) or Cooley’s anaemia, exhibits the most severe clinical symptoms while thalassemia minor (α-thalassemia) is mild and is considered to be clinically asymptomatic [1].

β-thalassemia is the most commonly found Thalassemia with an estimated 60-80 million people in the world. There are about 65,000-67,000 β-thalassemic patients in our country with around 9,000-10,000 cases being added every year [2].

Oral health of children suffering from Thalassemia major is reported to be poor by most of the researchers [3-5,7]. As low priority is given to the oral health status by the masses in the country in general, this negligence might be compounded for children already suffering from a life threatening systemic disease because the parents might focus on the medical procedures required to overcome this disease during early childhood. So, this poor oral health in turn leads to further deterioration of systemic health in these children.

A number of studies have been conducted relating dental caries with thalassemia. While some studies deny their association, other studies have contradicted this. Therefore, it has been realized that there is a need to further assess the oral health status of the patients with β-thalassemia major.

So, the aim of the present study therefore, was to determine the association, if any, of dental caries in patients suffering from β-Thalassemia major and further, to compare it with their normal counterparts in Udaipur.

II. Material & Methods

This study was conducted in Rabindra Nath Tagore Medical College and Hospital, Udaipur which included a total of 80 children suffering from β-Thalassemia major and 80 healthy controls. Institutional
The ethical committee of the hospital approved the study & written informed consent was obtained from all the study participants and parents of children participating in the study before their examination. The study was carried out from July 2013 to September 2013.

A. Inclusion criteria were:
1. Age group between 3 to 17 years.
2. Only those patients who were diagnosed previously for β-Thalassemia major were considered as cases.
3. Matching of age, sex & socioeconomic status of cases & controls.
4. The controls were free of thalassemia, both the major and minor forms.

B. Exclusion criteria were:
2. Those suffering from other diseases known to influence dental caries or severity of periodontal disease such as diabetes.

The study consisted of an interview & intraoral examination while they were undergoing routine blood transfusions. Data regarding the age, gender and educational status of all the children were recorded on a proforma. Plane mouth mirror & explorer were used to examine the oral cavity. Single examiner & single recorder were maintained throughout the study period. DMFT index for permanent teeth & dmft index for primary teeth to record dental caries experience in keeping with the criteria described by the World Health Organization [11].

C. Statistical analysis
Statistical analysis was done using Statistical Package for Social Sciences, version 17. Descriptive statistics including mean and standard deviation of each clinical parameter were determined for all the groups examined. The student t test was used for comparison of dental caries experience in the permanent and primary dentition of the study and control groups. ANOVA test was used for the comparison DMFT/dmft among different age groups of control group. The level of significance was set at p <0.05.

III. Results

<table>
<thead>
<tr>
<th></th>
<th>Thalassemia N</th>
<th>Mean ± Std. Deviation</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>dmft</td>
<td>Healthy 80</td>
<td>0.16± 0. 489</td>
<td>1.240</td>
<td>0.217*</td>
</tr>
<tr>
<td></td>
<td>Thalassemic</td>
<td>0.30± 0. 863</td>
<td></td>
<td></td>
</tr>
<tr>
<td>deft</td>
<td>Healthy 80</td>
<td>1.96 ± 3.863</td>
<td>0.168</td>
<td>0.867*</td>
</tr>
<tr>
<td></td>
<td>Thalassemic</td>
<td>2.02 ± 2.611</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean DMFT was found to be 0.30±0.863 among cases as compared to 0.16±0.489 among controls while mean deft was found to be 2.02±2.611 and 1.96±3.863 respectively. Table 1 shows that DMFT/ dmft (P > 0.05) had no relation with thalassemia and the results are not statistically significant.
Table 2: Comparison of the occurrence of dental caries in male/female thalassemic patients

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean ± Std. Deviation</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>43</td>
<td>2.37 ± 2.708</td>
<td>0.034</td>
<td>0.973*</td>
</tr>
<tr>
<td>Female</td>
<td>37</td>
<td>2.35 ± 2.690</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p > 0.05

Mean for DMFT/deft was found to be 2.37±2.708 in males whereas it was 2.35±2.690 in females. Table 2 shows that gender has no effect on caries in thalassemic patients as no statistically significant difference was seen in caries prevalence between males and females (P > 0.05).

Table 3: Comparison of the occurrence of dental caries within age groups

<table>
<thead>
<tr>
<th>Age groups</th>
<th>N</th>
<th>Mean ± Std. Deviation</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 6</td>
<td>21</td>
<td>1.52 ± 1.834</td>
<td></td>
</tr>
<tr>
<td>6-12</td>
<td>47</td>
<td>3.13 ± 2.990</td>
<td>0.006*</td>
</tr>
<tr>
<td>&gt;12</td>
<td>12</td>
<td>0.83 ± 1.337</td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05

The age range of the study population was between 3-17 years. The age groups were divided according to the dentition (primary, mixed and permanent). This table shows the relation between DMFT/deft and age of the thalassemic patients and there was a clear statistical significant difference in caries experience amongst thalassemia patients in all the three age groups (P<0.05)

IV. Discussion

The present study was conducted in order to assess dental caries in children suffering from beta thalassemia major. On the basis of researches done so far, a consensual opinion regarding the relation between thalassemia and gingival status (Al-Wahadni et al [3], Kaur et al [4], Scutellari et al [8], Mehdizadeh et al [9]) and thalassemia and malocclusions (Scutellari et al [8], Mehdizadeh et al [9], Girinath et al [11]) was found but no decisive and conclusive findings have been established regarding the relation between the occurrence of dental caries and thalassemia. Because of the prevailing contradictory opinions regarding the relation between dental caries and thalassemia, an attempt has been made in this paper to further investigate and exclusively focus on the relation between them.

No difference was found in mean DMFT among cases and controls. The results were similar to the results obtained by Qureshi et al [6] but contradictory to the studies done by Wahadni et al [3], Gomber et al [5] and Kaur et al [4] who found significantly higher caries in case group compared to control group.

No difference in mean deft was found among cases and controls. The results of the present study were in agreement with Scutellori et al [8] and Qureshi et al [6] who found similar incidence of dental caries with beta-thalassemia subjects and their controls. On the contrary, the results were in disagreement with Al-Wahadni et al [3], Gomber et al [5] and Kaur et al [4] who found dental caries in primary teeth significantly higher among beta thalassemia subjects than controls.

According to Kaplan et al [12], caries in thalassemic patients might be because of the fact that parents are more concerned about the serious physical problems and pay less attention to the dental ailments, and seek dental care only when the child is in pain whereas in normal patients the occurrence of dental caries can be attributed primarily to the casual approach towards oral health. No difference in mean DMFT/deft might also be attributed to the variation in sample size, area, age range in addition to the method used for determining the prevalence of dental caries.

No difference in the deft/DMFT on gender basis was found in thalassemic patients. Similar results were obtained by Leonardi et al [7] and Kaur et al [4] who reported higher caries prevalence in thalassemia patients with similar def/DMF values for both the sexes.

Significant difference was observed in caries experience amongst thalassemia patients among the three age groups. These results were similar to that of Al-Wahadni et al [3] while Mehdizadeh et al [9] found difference was not statistically significant in the 2-5-years-old age group, but in the other two age groups, the DMFT scores of thalassemic patients were significantly higher. According to Al-Hadithi [10], no statistical significant differences between thalassemic and non thalassemic groups in mean value of DMFT at age 6-8 years were observed but significant results were seen at age 9-12 years.

In conclusion, our study did not show any relationship between Thalassemia and dental caries experience. There was no statistically significant difference in the dental caries status of children with
β-Thalassemia major and their normal counterparts. It is evident enough that the occurrence of dental caries can be attributed primarily to the casual approach towards oral health. So there is a need to create awareness about the oral health status in people and educate such group in the prevention of dental caries and periodontal disease.

However, the result of the present study needs to be supported by further studies with a greater sample size.

References