ABSTRACT

Objective: Numerous epidemiological studies have been carried out to assess the association of ABO blood typing and systemic diseases. However, the research is still at the infancy stage with regards to the dental field. Periodontitis, being one of the most prevalent diseases in the oral cavity can be supposed to be influenced by the blood grouping pattern among patients. The present cross-sectional study was carried out to assess the relationship between periodontal disease status and the ABO blood group.

Methods: In a retrospective study of 2014, patients who reported to Saveetha Dental College and Hospital and diagnosed with chronic periodontitis, both localized and generalized forms were included. Demographic data, diagnostic and the ABO blood grouping information were procured from the case records of 410 subjects and then analysed.

Results: Among the 410 individuals, 245 were diagnosed with localized chronic periodontitis whereas 165 subjects had suffered from generalized chronic periodontitis. A high fraction of the localized periodontitis population (20.97%) was of the blood group ‘B.’ Similarly (12.92%) of the generalized periodontitis cases belonged to either ‘B’ or ‘O’ blood groups. The least affected blood group was ‘AB.’

Conclusion: This cross-sectional study shows a definite relation between blood typing and periodontal disease. Further studies are required in order to validate the usage of blood groups as risk predictors for periodontitis.

Keywords: ABO antigen, ABO blood group, Periodontal disease, Periodontitis.
Table 1: Percentage distribution of ABO blood group respectively

<table>
<thead>
<tr>
<th>Periodontitis</th>
<th>Group A (n)</th>
<th>Group B(n)</th>
<th>Group AB(n)</th>
<th>Group O(n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localized</td>
<td>63</td>
<td>86</td>
<td>14</td>
<td>82</td>
</tr>
<tr>
<td>Generalized</td>
<td>38</td>
<td>53</td>
<td>21</td>
<td>53</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>139</td>
<td>35</td>
<td>135</td>
</tr>
</tbody>
</table>

Fig. 1: Proportional distribution of ABO blood groups among localized periodontitis patients

Fig. 2: Proportional distribution of ABO blood groups among generalized chronic periodontitis patients

The presence of microorganisms is a fundamental factor in inflammatory periodontal disease, but the development of the disease is also associated with certain environmental and genetic factors. Studies on ABO blood groups and the variation in the rate of periodontitis affected individuals were carried out by various researchers. They have deduced that there were variations based on the region and the blood groups. Demir et al. found that different ABO blood groups may show significant differences in the rates of colonization of a number of periodontal pathogens that are the main etiologic agents of periodontal diseases [10].

The observed values for blood groups A, B, AB and O were 24.63% (101), 33.9% (139), 8.53% (35) and 32.92% (135) respectively. This is in line with a recent study carried out by Pai et al. in Karnataka, South India. The obtained results for the blood groups A, B, AB and O (24.27%), 228 (30.4%), 45 (6%), and 295 (39.3%) [11]. Through our study, it is noted that a comparatively high percentage of individuals with blood group B (20.97%), and a smaller percentage of blood group AB (3.41%) patients were observed in the localized periodontitis group. Similarly, a high percentage distribution of blood group B and O (12.92%) and a smaller percentage of blood group AB (5.12%) in the generalized periodontitis group was observed.

Our study in accordance with the research conducted by Koregol et al., which concluded that the blood group O showed a higher percentage in the periodontitis group, and that AB phenotype showed the least percentage in periodontal diseases [12]. This association can be due to various blood groups antigens acting as receptors for infectious agents associated with periodontal disease. This broad correlation between periodontal disease and ABO blood group also points toward susceptibility of the subjects with certain blood groups to periodontal disease.

In our study, the results obtained showed a higher fraction of blood groups’ B (33.9%) and O (32.92%) among periodontitis patients. The data obtained also follows the general distribution of blood groups among South Indians, i.e., 20.68%, 33.07%, 38.99%, and 6.25% for blood groups A, B, O and AB respectively [13], which is of the same geographic location as our study. Hence the results cannot be definitive as we did not establish a control group which is one of the limitations in this study. Moreover, smokers, diabetic patients, tobacco and drug users, alcoholics were not excluded and these confounding factors generally increase the risk for periodontal disease and could have influenced the results obtained from this study.

The genetic factors may alter the oral ecology and have a bearing on the etiopathogenesis of periodontal diseases. Genetic differences in immune cell development and antigen presentation may contribute to the susceptibility to certain infectious diseases. Even though our study having a broader focus showed two blood groups (B, O) having
an association with periodontal disease, future studies with an emphasis on the correlation between the blood group antigens and development of periodontitis are necessary in order to gauge the susceptibility pattern of different individuals. The derived results can be used as a stepping stone in order to focus the research on targeting highly susceptible individuals and developing customised treatment strategies.

CONFLICT OF INTERESTS
Declared None

REFERENCES