THE DISTRIBUTION OF MUTANS STREPTOCOCCI IN PLAQUE ON THE MARGIN OF AMALGAM, ON THE ENAMEL AND ON THE SURFACE OF AMALGAM RESTORATION

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Abstract

The aim of the study was to evaluate the level of distribution of mutans streptococci on the margin of amalgam restoration, compared with that on the enamel and on the surface of restoration. It is assumed that the level of distribution of mutans streptococci on the margin will be able to influence the presence of secondary caries. In this study the first molars of 20 patients were treated with amalgam restoration. The mutans streptococci was measured as the percentage of total CFU count in the plaque. The results showed a mean count of 108.8(SD= 55.2) of mutans streptococci in the margin; 97.7(SD= 63.5) on the enamel; and 61.4(SD= 32.4) on the surface of amalgam restoration. It seems that the level of mutans streptococci on the margin is higher than those on the enamel (p= 0.006), as well as higher than those on the surface of (p = 0.031). It is suggested that elevated level of mutans streptococci on the margin can indicate risk to secondary caries.

Key words: S. Mutans. Amalgam

Introduction

The level of mutans streptococci in plaque is also associated with the activity of caries. The composition of dental plaque can be affected by chemical properties of the restorative materials and may influence not only the adhesion of the plaque bacteria, but also the level of mutans streptococci in plaque. Secondary caries has been associated with the deterioration of dental restorative materials. Breakdown in marginal areas between cavity preparation and restorative materials result in a micro leakage and it is a pathway for re-infection by mutans streptococci. Preventing marginal
breakdown of amalgam restoration could reduce the chances of secondary caries. In case of amalgam restoration, physically should be a good restorative materials are very important in the prevention of recurrent caries. Information in this area is limited, both on evaluation of the restorative materials and on the variation of the level of mutans streptococci. The purpose of this study was to observe the in-vitro level of mutants streptococci in the line of breakdown restorative materials.

Materials and Methods

Twenty patients participated in the study were treated with amalgam restoration at the lower first molars.

Bacterial sampling and bacteriological procedures

Results

Table. The distribution of mutans streptococci in plaque on the margin, on the enamel and on the surface of amalgam restoration.

<table>
<thead>
<tr>
<th>Material</th>
<th>n</th>
<th>Mean</th>
<th>Std Deviation</th>
<th>Std Error</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margin</td>
<td>20</td>
<td>108.85</td>
<td>55.16</td>
<td>12.33</td>
<td>44</td>
<td>247</td>
</tr>
<tr>
<td>Enamel</td>
<td>20</td>
<td>97.70</td>
<td>63.46</td>
<td>14.19</td>
<td>20</td>
<td>300</td>
</tr>
<tr>
<td>Surface</td>
<td>20</td>
<td>61.40</td>
<td>32.35</td>
<td>7.23</td>
<td>11</td>
<td>124</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>89.32</td>
<td>55.05</td>
<td>7.11</td>
<td>11</td>
<td>300</td>
</tr>
</tbody>
</table>

The results of one way Anova to evaluate the difference among groups significant differences (F = 4.550; P = 0.015). Using multiple comparisons there was a significant difference between the level of Streptococcus mutans on the enamel and on the margin of amalgam restoration (P = 0.006), as well as between the level of Streptococcus mutans on the surface and on the margin of amalgam restoration (P = 0.006). In addition there was significant difference between the level of Streptococcus mutans on the enamel and on the surface of amalgam restoration (P = 0.031).

Discussion

Quantity of Streptococcus mutans in selective media agar Mitis Salivarius Sucrose Bacitracin is the most widely used. Recently the new simple selective medium
for Streptococcus mutans was introduced called TYS20B Trypsinase-Yeast-Extract Cystine Sucrose Bacitracin\textsuperscript{6}. It has been reported that TYS20B showed higher counts of mutans streptococci from oral samples than Mitis Salivarius Sucrose Bacitracin medium \textsuperscript{6}. Therefore, TYS20B was preferred in this study.

The level of mutans streptococci recovered varied widely among on the margin of restoration on the enamel and on the surface of amalgam restoration. The level of mutans streptococci in plaque from the margin of amalgam was significantly higher (p = 0.006) than in samples from the enamel and the surface of amalgam restoration. These findings confirm the early results which have shown that levels of mutans streptococci in plaque from the margin of amalgam are similarly higher \textsuperscript{7}. It has been suggested that the level of distribution of mutans streptococci in the margin of restoration missing amalgam or gap width are strongly linked to recurrent caries. The marginal gap is suitable for growth of oral bacteria.

The results suggest the need for radiography and confirmation of the absence of secondary caries. Secondary caries is cited as the major cause of amalgam replacement but no study has yet validated lesions due to primary caries that progressed into the marginal area of the tooth margin \textsuperscript{8}. It is clear that amalgam restoration does not cure caries as is clearly evident in many recent studies which identified secondary caries as the principal cause of restoration replacement.

In summary it is now to arrest caries is to overcome those obstacle to prevention and restorative treatment with monitoring early lesions for caries activity also radiographic is needed for those purposes and the public must also be educated on the modern prevention so that they will demand such prevention services in the future.

\textbf{References}


