MOUTH PROTOZOA IN NORTH WEST FRONTIER PROVINCE OF PAKISTAN — A STUDY

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ABSTRACT

The Prevalence and role of mouth parasites in patients attending Out Patient Department of Khyber College of Dentistry, Peshawar, North West Frontier Province of Pakistan were investigated.

The prevalence of Entamoeba gingivalis and trichomonas tenax estimated in 150 patients belonging to rural and urban localities in North West Frontier Province of Pakistan during February 2006 to July 2006. A total of 150 Patients (90 males and 60 females) were screened by taking mouth swabs in a sterile tube containing normal saline solution and observing under x 100 with oil immersion. The over all infection of both Entamoeba gingivalis and Trichomonas Tenax was 60% with males showing higher prevalence (61.1%) than females (58.3%). Out of 90 positive patients 57% were harboring Entamoeba gingivalis and 3.3% Trichomonas Tenax. A positive association was found between prevalence of mouth parasites and poverty, 71% of these patients were from poor class. The infection rate was common in cigarette smokers than snuff (niswar) dippers. Not a single snuff dipper was found positive for Entamoeba gingivalis or Trichomonas Tenax.

Key words: Entamoeba, Trichomonas, Parasitic infections, Khyber College of Dentistry.

INTRODUCTION

The oral protozoa Entamoeba gingivalis and Trichomonas tenax have held a rather uncertain position in the history of research. Barrett and Smith reported observing Entamoeba gingivalis in nearly all patients suffering from periodontitis who were examined. Bass and Johns reported finding E gingivalis in 86 patients having periodontal disease and noted the absence of this organism in many normal individuals. They suggested that this protozoan might be pathogenic, on the basis of the evidence that emetine hydrochloride, a therapeutic drug used against parasitic amoebas, seemed to give beneficial results. Further work by Kofoed revealed E gingivalis in 75% or more of people over 40 years of age. It was shown, in this study that this organism was also prevalent in healthy mouths. Bateman discovered Trichomonas tenax (then called Trichomonas buccalis) in 26.5% of diseased mouths and 11.4% of normal mouths and concluded that diseased mouths offer a more habitable region for this organism than clean, healthy mouths but still doubted its pathogenicity. He also pronounced culture methods superior to the wet-smear method in detecting this organism. In 1958, an extensive study of conditions of oral hygiene, including the incidence of these two oral protozoa, was begun under the direction of Wantland et al.

The aim of the present study was to determine the incidence of mouth parasites in the region i.e., North West Frontier Province of Pakistan.

MATERIALS AND METHODS

Materials used for staining
1. Slides
2. Curette
3. Test tube
4. Normal saline solution
5. Light
6. Methanol

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METHODS

A total of 150 mouth swabs were collected from the patients from rural and urban areas of N.W.F.P to find out the incidence of the mouth parasites i.e., Entamoeba Gingivalis and Trichomonas Tenax for a period of six months i.e., February 2006 to July 2006. Intra oral examination was carried out using a dental mirror, Carries probe and a CPITN (Community Periodontal Index of Treatment Need) Probe. (Almas 1996) Usual examination instruments i.e. mouth mirror, fine periodontal probes were also used (Iqbal 1981)

The mouth extracts were examined for the presence of the protozoa (Mouth parasites) by indirect method. The mouth extract was taken from the supra and sub-gingival areas of the mouth with the help of the curette carefully. A drop of extract (preserved in normal saline solution) was put on a clean slide to which a drop of methanol was added after 1-2 minutes then added drop of 70% alcohol for 5 minutes. After this we added the eosin solution and waited for sometime and then put a drop of canadabalsum on the material and then cover slip was placed on it. Taking care to avoid formation of the air bubbles.

The slides were ready for microscopic examination. The screening was done under x100 objectives with oil immersion. At the time of collection of the mouth extracts a detailed data was collected regarding the variables of the study.

The various variable studied were;
1. Gender distribution of the patients
2. Socio-economic status of the patients
3. Social habits
   a. Smoking habits
   b. Smokeless tobacco use (Niswar)

RESULTS

Out of 150 mouth swabs collected from patients belonging to rural and urban areas of N.W.F.P, 90 were found positive for moth parasites an overall incidence of parasitic infection was 60% (Table 1 and fig 1)

Out of 90 positive cases 85 were found positive for protozoan Entamoeba gingivalis i.e., 57%. While amongst 90 positive cases, 5 were found positive for protozoan mouth parasite Trichomonas tenax i.e., 3.3% (Table 1)

Out of total 90 male patients, 61.1% were found positive for protozoan mouth parasites. While among 60 female patients, 58.3% were found positive. This shows 3% higher incidence amongst males than females. (Table 3) A positive correlation was found between incidence of mouth parasites and poverty.

High incidence was found among lower class group i.e. 71%. (Table 2)

In 40 smoker patients 22 were found positive showing 55% higher incidence than non-smokers i.e. 40%. (Table 3). Amongst 30 snuff dipper patients no one was found positive for E gingivalis and T tenax. It is interesting to note that not a single protozoan parasite was found in the mouth of snuff addicted patients. (Table 3)

<table>
<thead>
<tr>
<th>Socioeconomic class</th>
<th>Total number of cases</th>
<th>Number of positive class</th>
<th>Percent positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper</td>
<td>30</td>
<td>10</td>
<td>33.3%</td>
</tr>
<tr>
<td>Middle</td>
<td>50</td>
<td>25</td>
<td>50%</td>
</tr>
<tr>
<td>Lower</td>
<td>70</td>
<td>55</td>
<td>71%</td>
</tr>
</tbody>
</table>

TABLE 2. SOCIOECONOMIC DISTRIBUTION OF PATIENTS
Among 60 samples of tooth brush users, 25 were positive i.e. 42%. Among 90 non tooth brush users 60 were found positive showing 67% incidence. (Table 3)

Amongst 50 samples of Miswak users 25 were found positive i.e., 50%. While 75% were those who were not using Miswak (Table 3).

DISCUSSION

The researches done on mouth and tooth parasites are very limited and have been conducted only in a few countries. These studies revealed the existence of two parasitic protozoa called *E. gingivalis* and *T. tenax*. *E. gingivalis* belongs to Entamoebidae family and sub-order of Tubulinae. This parasite is found only in trophozoite form, which varies from 5-35 μm. Morphologically, this protozoan is similar to *E. histolytica* and diagnosis requires enough attention so that this protozoan could be differentiated from *E. histolytica* released from lung abscesses. This amoeba has a large number of pseudopodia. This parasite inhabits around teeth and gums, even in the space between teeth and especially in decayed teeth cavities. In some cases, it has been isolated from tonsil crypts and tonsil tissue sections. *T. tenax* is one of Trichomonadidae family members. The flagellated organism is only found in the form of trophozoite and its size varies form 5-12 μm. *T. tenax* and *E. gingivalis* are both mouth inhabitants but *T. tenax* is more active. *T. tenax* and *E. gingivalis* are transmitted through the same ways but *T. tenax* remains viable in water for a few hours to a few days. The infection rate to *T. tenax* differs from 0-20% depending on mouth hygienic condition. The prevalence of *E. gingivalis*, *T. tenax* and the mixed infection has been reported as 39%, 23%, and 17.7%, respectively. There is also one report of lung trichomoniasis. Epithelial cell, red blood cell and leukocyte lyses by the parasite.

The prevalence of widespread tooth decay and gum diseases are due to low standards of oral hygiene, dietary pattern, lack of dental education, socio-economic status, unawareness of the value of tooth brush or a wooden stick (Miswak), the rise of cost of private dental clinics and non availability of the dental care facilities in many areas of the country. Hardly 10% go for the treatment to a dentist. Those people who spent most of their income on food, private dental health is hard to afford and even emergency dental treatment is out of reach (Iqbal 1981).

The present survey reveals that the above statement is not only correct but has increased intensity.

For the maintenance of the oral hygiene different devices are used by Muslims Miswak is one of them. Miswak is obtained from the plant Arak (Salvadoran Persia) which is grown mainly in Saudi Arabia and other parts of the Middle East. It is used by the Muslim Communities around the World as a tradition and spiritual habits. Someone has to educate the people living in far fetch places of Pakistan how to and why we...
should use Miswak for teeth. Due to Miswak use Calcium and chloride content increases and Phosphate decreases. The Other method available for the maintenance of oral health is the manufacture of tooth brush which are common in most industrialized countries unfortunately the oral hygiene and the oral diseases are neglected by majority of the people. 21

According to preber (1955) 22 that smoking is important risk factor for both adult onset periodontitis and early onset periodontitis. Smoking may modulate the sub-gingival microbiota and increased the prevalence of certain pathogens. Smokers and non smokers incidence of different groups in present investigation revealed the highest protozoan mouth parasite infestation in smokers (55%) as compare to non smokers (40%) use of tobacco increased gingivitis, periodontal bone loss, attachment loss and Pocket formation (Grossi SG 1994). 23 The present study is consistent with this.

In the mouths of snuff addicts biological changes occur in the oral cavity due to snuff chewing. In our view the pH of the mouth of snuff addicts are so deteriorating that the protozoan cannot survive there. It is interesting to note that not a single protozoan parasite is found in the mouth of snuff addicts.

According to Crossner and Holm (1975) 24 the socio-economic factor of a certain population directly affect the oral health. During the survey the influence of protozoan in different socio-economic group were also observed. The higher incidence is found among lower class group.

According to WHO tooth brush and chew stick (Miswak) can be effective mechanical means for removing plaque for both instructions are necessary to ensure that they are used properly to remove plaque effectively without traumatizing the oral tissue. The present survey is consistent with the above statement and people brushing teeth with tooth paste twice daily for 4 to 5 minutes makes your gums and life healthy. Therefore, for the preparation of each obligatory prayers ablution i.e., “Wudu” must include the use of Miswak to clean teeth and to eliminate foul smell. According to Pervaiz many people use Miswak or brush but they have very poor oral hygiene. This is because many people do not understand the proper use of tooth brush or wooden stick Miswak. 25

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REFERENCES