ORIGIANAL ARTICLE
Prevalence of Gingival Inflammation among Patients Taking Antipsychotic Drugs

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ABSTRACT
Objective: To explore the prevalence and severity of gingival inflammation among the patients taking antipsychotic drugs.
Method: This cross-sectional study was conducted in OPD of a psychiatric department of a tertiary care hospital in Lahore, Pakistan. Sample of 1025 patients was taken with the history of antipsychotic drugs. Patients were examined for the prevalence and severity of gingival inflammation and periodontal disease using modified gingival index (MGI) and basic periodontal examination (BPE). Study was conducted from March to August 2022. Data will be entered in SPSS version 25.0. Descriptive statistics, i.e. frequency and percentage were calculated for categorical data.
Results: A total number 1025 patients with history of antipsychotic drugs were examined. 873 of them had some degree of gingival inflammation. Out of 873 patients with gingival disease, 636 (61.39%) patients exhibited mild to moderate inflammation whereas periodontal status of 337 (38.60%) patients presented severe inflammation. Basic periodontal examination was performed on individuals exhibiting severe gingival inflammation and patients were guided regarding further treatment that was needed to improve periodontal health.
Conclusion: The findings of current study revealed that patients who are on anti-psychotic drugs are at higher risk of developing gingival diseases due to reduced salivary flow and need advanced treatment for their periodontal condition.
Keywords: Psychosis, gingival diseases, Dental caries, Self-esteem

INTRODUCTION
Oral health is considered a major aspect of overall quality of life, self-esteem and general physical health.1,2 Principle functioning of mouth becomes affected due to the poor oral health caused by periodontal / gingival disease as well as dental caries.2 There is plenty of evidence in the literature that psychotic patients have higher susceptibility to tooth decay, missing teeth and filled teeth3 which need proper dental treatment,4 as psychotic patients have low compliance towards oral health maintenance,5 and the adverse effects of antipsychotic medications also play a role.6 The adverse effect seen with the use of antipsychotic medications is xerostomia i.e. decreased salivary flow rate, that results in increased incidence of dental caries, glossitis, periodontal disease, and stomatitis. Consequently, the patients have a higher need for dental treatments like tooth extraction and restorations.7,8
Saliva plays a vital role in the prevention of periodontal disease by the virtue of its properties. The action of shear forces associated with salivary flow is important for prevention of dental and periodontal tissue from pathogenic flora. Saliva also contains different molecular components that help the host defense against bacterial colonization and periodontal disease. Antibodies (IgA) are also present in saliva that inhibit bacterial adherence and promote agglutination. Table 1
The need of the hour is to realize the effect of antipsychotic drugs in such patients. Till now, very little literature is available which evaluated the severity and prevalence of gingival inflammation among patients with antipsychotic medications.9,12
Periodontitis is a chronic multifactorial inflammatory disease associated with dysbiotic plaque biofilms and characterized by progressive destruction of the tooth-supporting apparatus.13 Progression of disease results in destruction of periodontal attachment, along with the supporting bone, which results in tooth mobility and finally tooth loss in severe cases.13 Loss of periodontal attachment is an irreversible damage which leads to loss of tooth if not treated timely.13
The quality of life of patients with periodontal disease always remain compromised in terms of aesthetics as well as function which in the longer run adversely affects the self-esteem and well-being of the patients.14 It is also evident that periodontal and gingival diseases are associated with the risk for systemic diseases such as cardiovascular accidents and uncontrolled diabetes.15,16,17,18
The Modified Gingival Index (MGI) is based on the visual scale to evaluate health of gingiva in terms of changes appear on the basis of inflammation severity.19
The BPE is a simple and rapid screening tool that is used to for further examination needed and provides basic guidance on treatment needed. These BPE guidelines are not descriptive but represent a minimum standard of care needed for improvement and maintenance of oral health.
In Pakistan, no study has been cited which explored the prevalence of periodontal disease among the patients taking anti-psychotic drugs. So, this study was planned to fill this gap in literature which will be helpful for dentists, psychiatrist and general population who are associated with the patients of psychosis.
Therefore, the objective of this study was to explore the prevalence and severity of periodontal disease among the patients of psychosis that are on medications.

Table 1: Salivary components and their functions

<table>
<thead>
<tr>
<th>Components of Saliva</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibodies (IgA)</td>
<td>Inhibits bacterial adherence and promotes agglutination</td>
</tr>
<tr>
<td>Lactoferrin</td>
<td>Stops bacterial growth</td>
</tr>
<tr>
<td>Hystatin</td>
<td>Neutralizes lipopolysaccharides</td>
</tr>
<tr>
<td>Cystatin</td>
<td>Inhibits bacterial growth</td>
</tr>
<tr>
<td>Mucin</td>
<td>Inhibits bacterial adherence and promotes agglutination</td>
</tr>
</tbody>
</table>

METHOD
This cross-sectional study was conducted in OPD of a psychiatric department of a tertiary care hospital in Lahore, Pakistan. Sample of 1025 patients was examined for the prevalence of gingival diseases with the history of antipsychotic drugs. Among this sample, 873 patients were found to have gingival inflammation of varying severity. Study was conducted from March to August 2022. Patients who were taking anti-psychotics were included in the study. Modified gingival index was recorded for patients who gave consent to be a part of this study, gingiva was visually examined...
for inflammatory changes, MGI classifies the gingival inflammation on the basis of score given in Table 2. MGI classifies the gingival inflammation into 4 basic categories i.e. normal, mild inflammation, moderate inflammation and severe inflammation.

Basic periodontal examination was performed on patients exhibiting severe gingival inflammation as evaluated by MGI to screen the patients in need of further detailed periodontal examination and assess the type of treatment needed. Oral hygiene instructions were given to the patients and were further guided regarding effects of compromised oral hygiene and poor periodontal health on other aspects of general physical health. Age of participants ranged between 25 years to 55 years which was categorized in 2 groups. Group 1 consisted of participants with age ranged between 25 years to 38 years and group 2 consisted of participants with age ranged between 39 to 55 years. Data will be entered in SPSS version 25.0. Descriptive statistics, i.e., frequency and percentage were calculated for categorical data.

Table 2: MGI classification

<table>
<thead>
<tr>
<th>Score</th>
<th>Inflammation</th>
<th>Appearance</th>
<th>Volume</th>
<th>Extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Normal</td>
<td>无异常</td>
<td>无</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>轻度改变在颜色和质地但不涉及整龈缘或附着龈部单位</td>
<td>一部分的龈缘单位</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Mild</td>
<td>轻度改变在颜色和质地但不涉及整龈缘或附着龈部单位</td>
<td>一部分的龈缘单位</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Moderate</td>
<td>中度龈缘增生和整龈缘或附着龈部单位</td>
<td>边缘增生和/或边缘增生和整龈缘单位</td>
<td>整龈缘单位</td>
</tr>
<tr>
<td>4</td>
<td>Severe</td>
<td>重度龈缘增生和整龈缘或附着龈部单位</td>
<td>边缘增生和/或边缘增生和整龈缘单位</td>
<td>整龈缘单位</td>
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</tbody>
</table>

RESULTS

Total number of patients examined with history of antipsychotic drugs were 1025 patients, out of which 873 patients were had some degree of gingival inflammation in their oral cavity.

Table 3: Incidence of periodontal disease in patients with history of antipsychotic drugs

<table>
<thead>
<tr>
<th>Total Patients Examined</th>
<th>With Gingival Inflammation</th>
<th>Without Gingival Inflammation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1025</td>
<td>873</td>
<td>152</td>
</tr>
</tbody>
</table>

In 873 patients, female patients were 63.48% and male participants were 36.52%

Figure 1: Gender wise data distribution

From entire data of 873 patients of drug history, patients in age group 1 were 41.30% and in age group 2, total patients were 58.69%

![Graph 2: Age wise data distribution](image)

In entire data of 873 patients with periodontal disease, periodontal status of 61.39% patients falls between mild to moderate range whereas periodontal status of 38.60% patients falls under severe category.

Table 4: Severity status of periodontal disease

<table>
<thead>
<tr>
<th>Drug and Inflammation</th>
<th>Mild to Moderate gingival Inflammation</th>
<th>Severe gingival Inflammation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with history of Drug and Inflammation</td>
<td>61.39%</td>
<td>38.60%</td>
</tr>
</tbody>
</table>

DISCUSSION

The findings of current study revealed that the prevalence of gingival inflammation was significantly higher in patients taking antipsychotic medications. There was variation in the prevalence of gingival inflammation among different age groups and gender, gingival inflammation was more prevalent in females as compared to males which is in line with the findings of previous studies and prevalence was more in older age groups.

The findings of current study, the prevalence of gingival disease among patients taking antipsychotic drugs was 85.17% which is low as compared the findings of a survey-based study conducted in Taiwan according to which 90% of the psychotic patients had gingival inflammation. A similar study conducted in Hong Kong reported that the prevalence of gingival disease among psychotic patients was 98.5%. In current study, severe gingival inflammation was found among 38.60% of the patients while 61.39% percent of the patients had mild to moderate level of disease. From the findings of the study, it could be concluded that early use of preventive measures can help in preventing the occurrence of gingival disease, periodontal disease, caries and eventually tooth loss in such patients. Very little data is present on this subject as majority of the international researches have been done on limited data whereas no research has been cited that is conducted in Pakistan.

A study conducted on the antipsychotic drugs which plays part in accelerating the periodontal disease among the patients of psychosis revealed that FGAs, anti-hypertensives, anticholinergics, and SGAs, all are contributing to the development of periodontal disease among patients of psychosis. Hence, it is important to prescribe lowest possible dose of antipsychotics and other medications as a preventive measure of developing periodontal disease. Patients may further be guided while starting their treatment with antipsychotic drugs to visit their dentists regularly.
and inform the dentist regarding the medications to keep the oral cavity and periodontium in optimum state. Many research findings reported xerostomia which is the outcome of taking anti-psychotics, as an increased risk for developing periodontal disease.23,26,27 The findings of current study revealed that patients who are on anti-psychotic drugs are at higher risk of developing periodontal disease due to low salivary flow rate.

REFERENCES