A CLINICO-PATHOLOGICAL STUDY OF ORO-DENTAL DISEASES PRESENTING TO A TEACHING DENTAL HOSPITAL IN PESHAWAR.”A PROSPECTIVE STUDY”

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ABSTRACT

Objective: The aim of this study was to create a profile of oral diseases presenting to the paedodontics department in a local dental hospital in Peshawar and to try and data compare it to similar available data.

Materials and Methods: This prospective, cross-sectional study was conducted in the Paedodontics department of Sardar Begum Dental Hospital, Peshawar. Data was collected by using non-probability convenience sampling from January 2019 through to August 2019. All pediatric patients aged 0-17 years after clinical assessment and initial diagnosis were included in the study. The sample size was 775 patients. The patients were examined by a single operator on the dental unit after taking informed, verbal consent from their parents/guardians. The data was analyzed using SPSS 20 and frequency of diseases according to age and genders were calculated on that basis. The analysis involved descriptive statistics and the Pearson’s chi-square.

Results: A total of 775 patients were included in this study. Out of these, 53% were males and 46.3% were females. The ages of patients seen were subdivided into 3 groups. The group most frequently presenting with oral and dental lesions was the 6-12 age group. The highest number of lesions 65.8% was present in being group 1. The deciduous first molars were most frequently affected by pathologies 272 closely followed by the deciduous second molars 219, the first permanent molars affected in 93 cases and finally the deciduous central incisors 65 were affected by different pathologies. The next most frequent problem was infection associated with external resorption in 215 (27.7%) cases. There were 143 (18.45%) retained teeth, 63 teeth with infection and internal resorption, 17 supernumary teeth, 16 cases of trauma, 15 pulp polyps, 10 mucoceles, 7 cysts and 6 granulomas (13%).

Conclusion: The data collected was from a single institute, over a period of 8 months. The vast majority of oro-dental diseases comprised of caries and its associated problems. Infections were the major cause of external and internal resorption. A few cysts were associated with the teeth as granulomas and pulp polyps. Supernumeraries, peg laterals, dilacerations and double teeth were also present in the paediatric population. Soft tissue lesions included mucoceles only.

Results from this study should form part of a larger nation-wide data collection study.

Keywords: Oro-dental diseases, external and internal resorption, pathologies.

INTRODUCTION

Awareness of oral and dental diseases through epidemiological studies play a very important role...
in public health, due to the fact that they make you aware of the prevalence, incidence, ultimate progress and treatment of the diseases which affect children in a particular region.

There is a considerable difference between the paediatric and adult populations with regards to the kind of lesions that affect them.\(^1\)

Despite the fact that there is always a deep concern with regards to oral diseases in paediatric populations, very few publications are available in this field.\(^2\)

Paediatric patients, most frequently present with dental pathologies, the specimens of which are then submitted for histopathological examination, this is due to the very frequent presence of dental caries. A Global Burden of Disease 2010 study listed caries in permanent teeth as being responsible for a global prevalence of 35% of the diseases for all ages combined\(^3,4\). Malignancies rarely occur and comprise less than 1% of paediatric pathology samples. Other pathologies such as mucoceles are often reported as the most common soft tissue pathology. According to a WHO report oral cancer and caries have considerably increased from around 45.6% from 1990 to 2010 in along with the major non-communicable diseases like diabetes by 69.0\(^%\)\(^3,4\). The prevalence of diseases found in various studies is vital to educate oral health professionals on the prevalence of oral pathologies and lesions in the field of paediatric dentistry.\(^3\) The purpose of this study is to create a profile of the oral lesions presenting in a paediatric population.

**MATERIALS AND METHODS**

A prospective cross sectional study was carried out in the Department of Paedodontics at Sardar Begum Dental College, Peshawar. Data was collected by using non-probability convenience sampling from January 2019 through to August 2019. Cooperative patients aged 0-17 years of both genders, reporting for the first time to Department of Paedodontics were included in the study. Uncooperative children or those that were handicapped or had systemic disease were excluded. The patients were examined by a single operator on the dental unit after taking informed, verbal consent from their parents/guardians. Lesions were diagnosed after histopathological evaluation.

SPSS V 20 was used for analysis. Statistical significance was considered at p-value less than 0.05

**RESULTS**

A total of 775 patients were included in this study. Out of these 416(53\%) were males and 359(46.3\%) were females.(Figure 1) The ages of patients seen were subdivided into 3 groups with ages 0-5 being group 1, 6-12 group 2 and 13-17 group 3.(Figure 2) The group most frequently presenting with oral and dental lesions was the 6-12 age group. The highest number of lesions 65.8\% were present in this group followed by the 13-17 year age group with 22.1\% of the lesions and last was the 0-5 year age group with 12\% of the lesions. The maxilla was involved in 406 cases whereas the mandible was involved in 368 cases. With regards to the teeth the deciduous first molars were most frequently affected by pathologies 272 closely followed by the deciduous second molar 219. The next most frequently affected tooth was the first permanent molar 93 were affected and then the deciduous central incisors 65 were affected by different pathologies.(Figure 3) The most frequent presenting problem was grossly carious teeth 261(33.6\%), next most frequent problem was infection associated with external resorption in 215(27.7\%) cases. There were 143 (18.45\%) retained teeth, 63 teeth with infection and internal resorption, 17 supernumary teeth, 16 cases of trauma, 15 pulp polyps, 10 mucoceles, 7 cysts and 6 granulomas. Apart from these a few cases of natal teeth, double teeth, peg laterals, missing teeth and dilacerations were also present.(Table 1) A strong association

<table>
<thead>
<tr>
<th>Condition Of Tooth</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grossly Carious</td>
<td>261</td>
<td>33.7%</td>
</tr>
<tr>
<td>Infection (External )</td>
<td>215</td>
<td>27.7%</td>
</tr>
<tr>
<td>Trauma</td>
<td>16</td>
<td>2.1%</td>
</tr>
<tr>
<td>Retained</td>
<td>143</td>
<td>18.5%</td>
</tr>
<tr>
<td>Cyst</td>
<td>7</td>
<td>0.9%</td>
</tr>
<tr>
<td>Supernumery/Supplemental</td>
<td>17</td>
<td>2.2%</td>
</tr>
<tr>
<td>Infection (Internal)</td>
<td>63</td>
<td>8.1%</td>
</tr>
<tr>
<td>Natal</td>
<td>2</td>
<td>0.3%</td>
</tr>
<tr>
<td>Pulp Polyp</td>
<td>15</td>
<td>1.9%</td>
</tr>
<tr>
<td>Double Tooth</td>
<td>4</td>
<td>0.5%</td>
</tr>
<tr>
<td>Granuloma</td>
<td>6</td>
<td>0.8%</td>
</tr>
<tr>
<td>Peg Laterals</td>
<td>4</td>
<td>0.5%</td>
</tr>
<tr>
<td>Missing Teeth</td>
<td>3</td>
<td>0.4%</td>
</tr>
<tr>
<td>Dilaceration</td>
<td>4</td>
<td>0.4%</td>
</tr>
<tr>
<td>Mucocele/Ranula</td>
<td>11</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

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1. Authors, J. et al. (2019). 
2. Authors, J. et al. (2019). 
3. Authors, J. et al. (2019). 
Table 2: Age of child * tooth involved Crosstabulation

<table>
<thead>
<tr>
<th>Count</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>6</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>7</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>age of child</td>
<td>0 to 5</td>
<td>16</td>
<td>9</td>
<td>0</td>
<td>53</td>
<td>13</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>92</td>
</tr>
<tr>
<td>6 to 12</td>
<td>43</td>
<td>17</td>
<td>9</td>
<td>183</td>
<td>188</td>
<td>29</td>
<td>16</td>
<td>10</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>501</td>
</tr>
<tr>
<td>13 to 17</td>
<td>6</td>
<td>2</td>
<td>13</td>
<td>36</td>
<td>18</td>
<td>64</td>
<td>9</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>164</td>
</tr>
<tr>
<td>Total</td>
<td>65</td>
<td>28</td>
<td>22</td>
<td>272</td>
<td>219</td>
<td>93</td>
<td>26</td>
<td>13</td>
<td>6</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>757</td>
</tr>
</tbody>
</table>

Table 3: Chi-square test of age with tooth involved.

<table>
<thead>
<tr>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>22</td>
<td>.000</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>22</td>
<td>.000</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>757</td>
<td></td>
</tr>
</tbody>
</table>

a. 18 cells (50.0%) have expected count less than 5. The minimum expected count is .36.

Table 4: Chi square test of Gender with oral condition.

<table>
<thead>
<tr>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>16</td>
<td>.000</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>16</td>
<td>.000</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>1</td>
<td>.334</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>771</td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Chi square test of age of child and oral condition.

<table>
<thead>
<tr>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>32</td>
<td>.000</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>32</td>
<td>.000</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>1</td>
<td>.015</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>771</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1: Gender of patients.

Figure 2: Age groups of patients involved.
Causes and patterns of loss in permanent dentition...

In this study there was a slight predominance of males being affected by oro-dental problems with 54% being males and 46% females. There was a strong association between gender and disease condition with males being more prone to disease having a p value of 0.000. This is quite similar to a study carried out in Southern Pakistan with a ratio of 58% to 42%.

With regards to age of the patients lesions and dental problems were most frequently found in the 6-12 year age group accounting for 65.9% of the total number of lesions. The second most frequently involved group was the 13-17 year group making up 22.1% of the problems whereas the 0-5 year group comprised of 12% of the problems. In this study there is a significant association between age and the tooth involved. In the 6-12 age group deciduous first and second molars are the teeth most frequently involved by pathologies accounting for 47.8% of pathologies and with a p value of 0.000. This is probably due to the fact that before this age and after it there are not as many deciduous teeth in the oral cavity as compared to the age group 6-12 as they mostly exfoliate after this.

Also there is a much higher chance for deciduous teeth to get dental caries due to the fact that they have a low calcium content as compared to permanent teeth and are also different structurally.

The most frequently encountered problem amongst our study group was grossly carious teeth, 33.6% of our patients presented to the paedodontics department with this. This could possibly be explained by the fact that most of the children belonged to a low income and socio-economic group where there is not much awareness of oral hygiene, incorrect techniques for brushing and ignorance.

Poor dietary habits and the anatomical shape of deciduous teeth can also be the cause of high incidence of dental caries in children. The next most frequently encountered problem was external pathological resorption 27.7% of the patients presented with it.

DISCUSSION

The study of orodontal problems is not very well documented. A few articles are available on biopsied lesions in children, and a few on dental caries, but there isn’t much evidence in literature on all of these together in a paediatric population. In this study we have tried to address both to find out the pattern in our local population.

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Pulpal infection caused by carious teeth or acute trauma can be the cause of external root resorption in permanent teeth. In deciduous teeth it is part of the normal shedding process of teeth. In this study all the cases of external resorption were associated...
with carious crowns, although, the pressure from
cysts and tumours, chronic trauma as well as pressure
from impacted teeth can also be the cause.\textsuperscript{8} Internal
resorption was also seen in 8.1\% of the cases.

As for external resorption infection and inflam-
mation of the pulp, colonizing of the dentin with
bacteria, as well as trauma are the main etiological
factors for internal resorption.\textsuperscript{3} Since external and
internal resorption were also associated with carious
tooth the total number of patients thus presenting
with caries goes up to 69.5\%. This is slightly lower
compared to a study carried out in India where caries
incidence in 3-14 year olds was (82.62\%)\textsuperscript{10}. Another
study conducted in Egypt on children and adolescents
between 3-18 years of age had number of carious
tooth closer to our study at 74\%.\textsuperscript{6} Dental pathologies
are the commonest group of lesions diagnosed in
European oral pathology laboratories.\textsuperscript{11}

Another frequently encountered pathology was
the presence of supernumerary teeth 17 patients presen-
ted with this pathology. All of these supernumer-
ary teeth were non-syndromic. Supernumeraries can
be either single or more than one or uni or bilateral
in any of the arches in the alveolar ridge or palate
area but mostly in the premaxilla , in the deciduous
or permanent dentiton. Genetic and environmental
factors combined may possibly explain their presen-
tce. These teeth could cause complications like cyst
formation, crowding, midline diastemas or resorption
of the teeth in their close vicinity and need to be
treated accordingly.\textsuperscript{12,13} In a study by Bekiroglu et
al. supernumerary teeth were found in 4.35\% of the
paediatric population which was considerably higher
than our 2.1\%, whereas another study conducted on
an Australian population had an incidence of only
0.28\%.\textsuperscript{13} Apart from supernumerary teeth other dental
anomalies, peg laterals, dilacerations and double
teeth were also present. Altogether they were 9 in
number accounting for only 0.6\% of the total lesions.

15 cases of pulp polyps were diagnosed in this
current study. 10 patients presented with mucoceles.
These were very easily diagnosed and were most
frequently present on the lower lip making up only
1.2\% of our lesions. This is much lower than a study
in Karachi, Pakistan where the mucoceles made up
almost 3.4\% of the total lesions.\textsuperscript{5} One reason why
it is difficult to compare the prevalence of muco-
celes in this study with others that in some studies
they are part of biopsied lesions only and in some
studies they have been grouped together with ranu-
las, mucous extravasation cysts and salivary gland
pathologies.\textsuperscript{14} A total of 7(0.9\%) odontogenic cysts
were diagnosed after histopathological evaluation
out of which 5 were radicular cysts associated with
non vital teeth whereas 2 were dentigerous cysts that
had formed around impacted canines. Even though
in some paediatric populations incidence of denti-
gerous cysts is reportedly higher, in our study there
are more radicular cysts. This could be explained
by the difference in prevalence of caries in different
countries. It also could be that the radicular cysts
and periapical granulomas may be overlooked in
many regions due to the fact that they are not sent
for histopathological examination.\textsuperscript{15}

Periapical granulomas were a total of 6 (0.77\%)
in number, higher than a study in Karachi(0.37\%).
The cysts were slightly lower in percentage as com-
pared to the study in Karachi where cysts comprised
1.97\% of the lesions. 30\% of total population of the
world is made up of children and in Pakistan children
and adolescents make up 43\% of total population.
For this reason a complete profile of paediatric oral
diseases is very important.\textsuperscript{3} The result also shows
that there is a positive association between age of
the child and condition of the tooth again having a
p value of 0.000 .The age group 6-12 has maximum
number of grossly carious teeth 22.1\%, 20.2\% cases
of external resorption, 9.7\% cases external resorption
maximum number of pulp polyps and double teeth
were also present in largest numbers in this age
group. This study is one of the first documentations
of pediatric oral diseases that includes caries as well
as other lesions all together in one. The current study
indicates that dental caries is very widespread in the
paediatric population presenting to the paedodontics
department. A large number of the problems are
related to untreated caries and pulpitis.

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