Prevalence of Torus Mandibularis

INTRODUCTION

Torus mandibularis (TM) is a known benign osseous protuberance, which is most commonly located on lingual surface of the mandible above mylohyoid line. It is usually found in the mandibular cuspid-premolar region.1 TM arises in oral cavity and its clinical presentation may appear as unilateral or bilateral in location.2 It is the most common intraoral exostosis found composed of cancellous bone covered by compact bone which may be laminated. Generally speaking, TM begins to grow slowly and gradually. It tends to develop in early adult life and enlarges with the passage of time.3 It is seldom seen in children under ten years of age.4

Castro Reino and colleagues found that the TM is formed as a result of over activity of the osteoblast cells, leading to deposition of bone on the hemimandibular bodies. Histopathology of TM is similar to that of normal compact structure of bone and is composed of slightly spongy structure with marrow spaces.5 TM is usually an intraoral bony mass, which is easily diagnosed clinically on naked eye examination and are discovered incidentally during oral clinical examination. This is a painless bony growth ranging from few millimeters to several centimeters in size, which usually presents as well-rounded, smooth surfaced, hard, bony projections, covered with normal or blanched mucosa.6

ABSTRACT

The aim of this study was to determine the prevalence of torus mandibularis in dental patients with regard to ethnic population in Karachi city. This study was undertaken at a dentistry teaching hospital of Karachi. Eight hundred subjects were clinically examined, presenting for their common dental health issues with the diagnosis of torus mandibularis (TM). This study was conducted from January 2011 to March 2012. The location, position and clinical presentation of torus mandibularis were recorded, related to age and sex of various ethnic populations. Subjects participated in the study were 365 (45.6%) males and 435 (54.3%) females. Its overall prevalence in the study subjects was 8.6%. The mean age of patient was 41.79 and STD±16.61. Torus mandibularis was observed in both genders with females having predominance. Urdu speaking population showed higher frequency of TM as compared to other ethnic sample.

Keywords: Prevalence, torus mandibularis, mandible, exostosis, Pakistan

ORIGINAL ARTICLE

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The etiopathogenesis of sublingual torus mandibularis is not well understood. Several investigators believed that it is interplay of genetic and environmental factors particularly the nutritional factors in the pathogenesis of TM.\textsuperscript{7,8} Literatures supported that TM is strongly associated with parafunctional habits such as, clenching of teeth.\textsuperscript{9} We feel that insignificant research has been done in our country on this particular topic. Therefore, the aim of this study is to determine the frequency and location of torus mandibularis among various Pakistani ethnic samples. The study further investigates the relationship between age and sex in the sample population.

**METHODOLOGY**

A cross sectional study using subjects attending Hamdard University Dental Hospital (HUDH), Hamdard University Karachi. Subjects were randomly screened for dental examination. Total eight hundred and twenty four (824) patients participated in the study which was conducted from January 2011 to March 2012. Twenty four patients were excluded from the study because they refused to give consent. Study criteria and proforma was designed on the basis of previous research done on torus mandibularis. Informed consent was taken prior to the patient's examination and data were collected on specially designed recording form. This composed of name, age, sex, and section of visual and digital examination that showed presence or absence of TM, location (right, left or present on both sides).

The entry criteria were patients from both sexes of all ages. The patient’s age groups were classified into seven groups ranging from 10-80 years. The existence of torus was systematically and routinely ruled out by visual inspection and palpation. Examination was done on a dental chair in hospital setting using sterilized dental examination instrument and performing aseptic measures. Data from the case records were coded for entry into a database using the Statistical Package for Social Sciences (SPSS) version 15.

**RESULTS**

Out of the total subjects 365 (45.6%) were males and 435 (54.3%) females. Of 800 subjects studied, 69 (8.6%) had torus mandibularis. The TM was observed in 32 male and 37 female patients. The mean age of patients was 41.79 and STD±16.61. The median was 41.00. Result of the present study showed that TM was higher in females (Table 1). The age range of both gender were 10-80 years. Majority of TM were noted in 21-30 and 41-50 years age group and least were reported in 10-20 and 61-80 years of age group. Consistent presence of TM was seen between 41-60 age groups. The presence of TM was also investigated among various Pakistani ethnic study populations. Out of 69 subjects showing TM, Urdu speaking community showed highest expression 51(73.9%) and it was lowest observed in Balochis that was 1 (1.4%) (Table 2).

The distribution of torus mandibularis in relation to placement was also analyzed and it is shown in Figure 1. In this study predominantly bilaterally symmetrical pattern was observed in middle premolar region 49 (71.0%). 15 cases (21.7%) were reported in anterior part and 5 cases (7.2%) in posterior part. In the current study it was also observed on unilateral right and unilateral left side with the ratio of 18 (2.2%) and 15 (1.9%) respectively.

**TABLE 1: DISTRIBUTION OF TM ACCORDING TO GENDER AND AGE**

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Gender</th>
<th>Presence and Absence of TM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes (%)</td>
</tr>
<tr>
<td>10-20</td>
<td>Male</td>
<td>2 (8.0%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2 (6.7%)</td>
</tr>
<tr>
<td>21-30</td>
<td>Male</td>
<td>8 (11.3%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>10 (8.8%)</td>
</tr>
<tr>
<td>31-40</td>
<td>Male</td>
<td>6 (9.5%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2 (2.2%)</td>
</tr>
<tr>
<td>41-50</td>
<td>Male</td>
<td>6 (8.8%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>11 (12.4%)</td>
</tr>
<tr>
<td>51-60</td>
<td>Male</td>
<td>4 (6.3%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>9 (12.3%)</td>
</tr>
<tr>
<td>61-70</td>
<td>Male</td>
<td>3 (6.3%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2 (8.7%)</td>
</tr>
<tr>
<td>71-80</td>
<td>Male</td>
<td>3 (11.5%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1 (6.6%)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>69 (8.6%)</td>
</tr>
</tbody>
</table>

Key:
TM: Torus mandibularis
n= Total number of study population (800)
DISCUSSION

Related to torus mandibularis no reference work has been published locally so international literature has been used to support this study. This study is a small contribution on this topic. The findings of the present study interpret multiple aspects of torus mandibularis and its association with age, gender, location and ethnical grounds. In this study, result showed its increased prevalence in females. Present study finding is similar to previous studies suggested by Dosumo’s on Nigerian and Sebaie on Jordanian subjects.10,11 On the contrary studies that disagree with the findings of the present study include research conducted in Thai population, at central Dalmatian region, Croatia and Romanos study in New York showing higher frequency of TM in males.12,13,14 However Firas Al Quran states that there is no gender difference.15

In the current study, torus mandibularis was also investigated among various Pakistani ethnic study populations. Finding of this study revealed its higher expression in Urdu speaking and least in Balochi subjects. This finding should not be considered as final because the sample size was small and it is done in Urdu speaking dominated population. Therefore, it does not show a true representation of all ethnic races in Pakistan. Chohayeb and Volpe demonstrated the presence of torus mandibularis in various ethnic study populations in Washington DC (USA) and their analysis revealed slightly elevated level in Hispanics then African Americans and least percentages in Caucasians.16 This variation of findings could be due to variation in geographical location and genetics. In present study TM fluctuation is seen among different age groups, with majority seen in 21-30 and 41-50 years age groups and least recorded in 10-20, 61-80 years of age group. However, previous studies reported high prevalence of TM in 30-59 years of age group.12 Sawair reported increased prevalence in fifth decade of life which was associated with parafunctional habits.17 This was also supported by the theory which suggests that long term involuntary clenching or grinding of teeth will produce greater load on premolar-molar region resulting in development of bony exostosis due to strengthening of the occlusal forces.18 The growth of intraoral exostosis may fluctuate throughout life, but some investigators believe that the development of tori is a slow growing process which becomes evident in 2-3 decade of life.19,20

The distribution of TM according to location was also investigated. It was observed that majority of TM was found in bilateral symmetrical pattern and these findings are supported by Hiremath study in Malay population21 and study reported in Black South African population.22 The most common location of TM was premolars (middle region). TM was more on both sides of lingual surface of premolar region mandible 36 (4.5%). Unilateral right side of TM was more commonly seen than unilateral left side. These findings are in accordance with most of the studies.12

<table>
<thead>
<tr>
<th>Ethnic Groups</th>
<th>Presence and Absence of TM</th>
<th>Presence of TM</th>
<th>Absence of TM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urdu Speaking</td>
<td></td>
<td>51 (73.9%)</td>
<td>584</td>
</tr>
<tr>
<td>Sindhi</td>
<td></td>
<td>3 (4.3%)</td>
<td>39</td>
</tr>
<tr>
<td>Punjabi</td>
<td></td>
<td>7 (10.1%)</td>
<td>52</td>
</tr>
<tr>
<td>Balochi</td>
<td></td>
<td>1 (1.4%)</td>
<td>15</td>
</tr>
<tr>
<td>Pathan</td>
<td></td>
<td>5 (7.2%)</td>
<td>23</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td>2 (2.8%)</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>69 (8.6%)</td>
<td>731</td>
</tr>
</tbody>
</table>

Table 2: Distribution of TM according to ethnic origin

Key:
TM: Torus mandibularis
n= Total number of TM present study population (69)
The exact etiology of TM is unclear, but the role of genetics cannot be totally ignored in its development.\textsuperscript{3,12} In the present study no association of torus mandibularis with any systemic disease or dental anomalies was found. However, investigators have reported association of mandibular tori with chronic use of phenytoin drug treatment in Japanese samples.\textsuperscript{20} Firas from Jordan has cited that large size of TM may cause obstructive sleep apnea and hindrance in the denture wearing patients.\textsuperscript{15} Durrani and Barwise reported difficult endotracheal intubation in a patient associated with TM.\textsuperscript{29} However, the presence of tori is advantageous in harvesting bone in periodontal surgical procedures.\textsuperscript{15} Rocca and colleagues has introduced a new technical approach for the removal of tori. They used Er:YAG laser for the easy removal of tori and to avoid damage to the surrounding tissues. This technique also enhances the healing process.\textsuperscript{24}

**CONCLUSION**

Torus mandibularis is asymptomatic and usually does not require any surgical treatment, but only reassurance. In some situation these tori may need to be surgically removed when they are causing interference in the fabrication of prosthesis or functions. Furthermore, larger sample size of TM may require for true reflection of TM in Pakistani. Current study did not show any association of Torus mandibularis with any syndrome or systemic diseases.

**REFERENCES**