Prevalence of taurodontism, missing & impacted teeth in South of Iranian Population.

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Abstract: OBJECTIVE: To assess the prevalence of dental anomalies in a group of Iranian dental patients in Shiraz dentistry school, Iran. METHODS: 677 unselected dental patients aged between 15-60 years old (413 female and 264 male) were examined clinically and radiographically for the presence of dental anomalies using Orthopantomography. A detailed family history of any dental anomaly were obtained. Data were collected and analyzed by chi-square and fisher exact tests. RESULTS: Totally 170 patients (25.11%) had 165 dental anomalies. Among them Missing of wisdom teeth was the most prevalent anomaly (6.35%) followed by impaction of teeth (2.95%), missing of mandibular second premolars (2.36%) missing of maxillary lateral incisors (2.06%) and taurodontism (1.03%). Family history of dental anomalies was positive in 35.8% of the cases. CONCLUSION: Comparing these results with other studies proves that these anomalies occur at different frequencies among various populations around the world. Recognizing these anomalies will facilitate the endodontic, prosthodontic, periodontic and surgical management of such teeth.

Key words: taurodontism, missing teeth, impacted teeth

INTRODUCTION

The form, size and color of teeth as well as their eruption times in humans show wide, normal and biological variations within and among different populations of the world. Abnormal variations, however, do occur and in many cases these are due to genetic, environmental and pathological factors, or they may be a part of systemic or syndromic disorders.

According to Sarnat & Schour (1942), the growing tooth is a biological recorder which provides precise and permanent record of variations and fluctuations in the Tooth formation and mineralization. These anomalies may be restricted to only one tooth or be generalized involving all the teeth or they may be part of systemic or syndromic disorders (Winter and Brook, 1975).

Developmental anomalies of the dentition are not infrequently observed in dental clinics. However while these anomalies account for a relatively low percent of cases compared to other more common oral diseases such as dental caries and periodontal diseases, their clinical management is usually challenging, as they are ought to be treated by specified, time-consuming procedures.

Although the incidence of dental anomalies may be considered rare (which is not really the case) their significance should not be underestimated, because if they occur, they can confront the individual with serious problems. According to some studies the rate of dental anomalies in individuals seeking for orthodontic treatments is more than 40% (Uslu et al., 2009). These anomalies might be created by malocclusions, many of them might be the cause of malocclusion however.

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Many epidemiological surveys have been conducted in different parts of the world to determine the prevalence of various types of dental anomalies (Pillai et al., 2007; Goren et al., 2004; Pinho et al., 2005; Maatouk et al., 2008; Nordgarden et al., 2002; Albashaireh and Khader, 2006; Thongudomporn and Freer, 1998; Seglam and Tuzum, 2003; Cho SY et al., 2008). The results improve regional and ethno-racial variations in the prevalence of these disorders. This paper presents the results of a clinical and radiographic survey of some anomalies of tooth including impaction and missing of teeth and taurodontism, in Shiraz, Iran and compares them with other reports.

MATERIAL AND METHODS

The subjects of this study were patients who attended the dental clinics of the Shiraz faculty of dentistry between December 2007–October 2008. Patients referred for panoramic radiographs were clinically examined, a detailed family history of any dental anomalies in their first and second degree relatives was obtained and finally their radiographs were studied in detail for the presence of dental anomalies.

Panoramic views were used to detect dental anomalies, as their vulnerability in this respect was proven by previous studies. (Cholitgul and Drummond, 2000; Agurto Goya et al., 2008). A total of 677 subjects aged 15-60 years old comprising 413 female and 264 male were included. Each patient was examined clinically for dental anomalies using dental mirror with sufficient light. The clinical details included patient’s age and gender, the numbers, size and shapes of the dentition were carefully checked and all abnormalities were recorded. These clinical details were undertaken by the experienced clinician. The radiographs were carefully analyzed by one of the authors (radiologist) using magnifying lens and x-ray viewer, in a darkened room for any anomalies. The data were collected and statistically analyzed using chi-square and Fisher exact tests.

In accordance with calcification table time of teeth, a tooth was considered as missing if its radiopacity could not be detected on panoramic view, and no history of extraction for that certain tooth could be obtained (14). For example, on the basis of great variation in calcification of premolars, the radiographic absence of premolars considered as their missing only after the age of seven years. Also, any disease or disorder which interferes with teeth development, excluded the case from the study.

History of extraction of permanent teeth was taken and the subjects with incomplete dentition without history of extraction were included in this research for evaluation of missing teeth.

Dental impaction is defined as cessation of eruption of a tooth caused by a physical barrier in the eruption path or the abnormal position of the tooth. (Ragoobar et al., 1991)

Impaction was mentioned as a tooth that is not expected to erupt completely into its normal functional position based on chronologic, clinical and radiographic assessment.

Presence of taurodontism defined as an apically displacement of the pulp chamber, elongation of the tooth trunk and shortened roots without the usual constriction at the cemento enamel junction. According to Tulensalo, a tooth is classified as taurodontic when the distance between the baseline connecting the mesial and distal points of the cemento enamel junction and the highest point of the floor of the pulp chamber reached or exceeded 3.5 mm (Tulensalo et al., 1989) In this study the morphologic characteristics of teeth, as mentioned, were the main factor in defining a tooth as a taurodont one.

RESULTS AND DISCUSSION

The prevalence of considered dental anomalies is shown in Table -1.

<table>
<thead>
<tr>
<th>Type of Abnormality</th>
<th>Incidence(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing of wisdom teeth</td>
<td>6.35%</td>
</tr>
<tr>
<td>Impaction (3rd molars excluded)</td>
<td>2.95%</td>
</tr>
<tr>
<td>Missing of mandibular 2nd premolar</td>
<td>2.36%</td>
</tr>
<tr>
<td>Missing of maxillary lateral incisor</td>
<td>2.06%</td>
</tr>
<tr>
<td>Taurodontism</td>
<td>1.03%</td>
</tr>
</tbody>
</table>

In this research a total of 170 (25.11%) patients showed dental anomalies. 20 patients (2.95%) showed more than one anomaly. Surprisingly an eighteen year old boy showed 5 dental anomalies at the same time (missing of both mandibular wisdom teeth, dilaceration of right canine and first premolar of the mandible. Taurodontism in the first and second maxillary molars, invagination in the left maxillary incisor and missing of left mandibular lateral incisor.

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Among considered anomalies, missing of wisdom teeth was the most prevalent anomaly (6.35%) followed by impaction of teeth (2.95%), missing of mandibular second premolars (2.36%), and taurodontism (1.03%). There was not a significant difference between the sexes in each anomaly (P = 0.391).

Missing of wisdom teeth was the most common anomaly and has been seen in 43 patients (11 male and 32 female). There was not a significant differences between the sexes (P = 0.173). Analysis of the data of this anomaly showed that left mandibular third molar accounted for 1.62% of all anomalies.

Impaction of teeth (third molars were excluded) was seen in 20 patients (10 males and 10 females). Prevalence of this anomaly was 2.95% and impaction of the canine were seen in 19 patients (2.8%). Impaction of left maxillary second premolar was seen in one subject. There was not a significant differences between both sexes (P = 0.313).

Missing of mandibular second premolars were seen in 16 patients (10 males and 6 females).

Missing of lateral incisors was seen in 14 patients (3 males and 11 females) and in five cases was bilaterally. In one case left mandibular incisor involved.

Taurodontism, seen in 5 males and 2 female patients, was the least prevalent anomaly (1.3%). Second molars involvement were more prevalent than that of first and third molars. There was not a significant differences between both sexes (P = 0.118).

Family history of dental anomalies was positive in 35.8% of the cases.

Discussion:

The data of present study have been collected from Iranians who attended oral medicine and radiology departments of Shiraz Dental School. Caution has been taken in extrapolating the results of the present survey to larger population. However data such as these can serve as a pointer to dental anomalies in the larger community and how they may affect the overall pattern of dental treatment provided in the community. In this survey, the prevalence rates of 3 most commonly occurring dental abnormalities were examined. While the prevalence of these abnormalities are quite low compared to other common oral and dental disorders such as dental caries and periodontal disease, they present a challenge to the practitioner as they may complicate the treatment of common dental diseases like caries.

In this research missing of wisdom teeth accounted for the highest prevalence at 6.35%. This figure was generally lower than those from other population groups. Goren et al., (2005) reported a prevalence of 38.5% missing of third molars in 18 years old Israeli army recruits. Most studies have found a higher prevalence of hypodontia in girls than in boys and also that the most frequently encountered congenitally missing teeth after the third molar are the mandibular second premolars followed by the maxillary second premolars or maxillary lateral incisors. However there are some exceptions such as the maxillary incisors (Agurto Goya et al., 2008; Nik –Hussein NN. 1989; Silva Meza, 2003). In present research there is not significant differences between both sexes.

Impaction of teeth accounted for % 2.95 prevalence in this research.

Ezodini et al., (2007) results were different from those of ours (8.3%). They examined 480 panoramic radiographs of patients attending dental faculty of Yazd, Iran. This study was similar to ours in some respects. Seglam (2003) in Turkey evaluate the incidence of fully impacted teeth and their complications on 1000 patients. He reported 11% fully impaction of teeth. The maxillary left third molars in females and the mandibular left third molars in males were the most frequently impacted teeth. Complications, such as pain, cysts, resorption of the impacted or adjacent teeth, infection, crowding, and axial changes in the position of the adjacent teeth, were associated with 28.42% of impacted teeth. Impaction was most frequent in the 20- to 35-year-old group. Shah et al., (1978) and Groyer et al., (1985) reported that in the permanent dentition impaction, third molars are the most commonly affected, accounting for over 80% of all impacted teeth. After third molars, maxillary canines are the most frequently impacted teeth, followed by second premolars. In present study third molar impaction was excluded.

Missing of mandibular second premolars accounted for 2.36% prevalence in this research. Nordgarden et al., (2002) reported prevalence of 2.1 for such anomaly in Norway. Maatouk et al., (2008) reported prevalence of 13.3% for hypodontia in Tunisia and missing of second premolars accounted for 30.6% of all subjects.

Missing of maxillary lateral incisors accounted for 2.06% prevalence in this study. Pinho et al., (2005) reported prevalence of 1.3% for such anomaly. Absence of these teeth was bilateral in 5 patients (0.775%). Nordgarden et al., (2002) reported prevalence of 0.9% for this anomaly in Norway.

Taurodontism were defined as the presence of an epically displaced pulp chamber without the usual constriction of cemento enamel junction. In this study this anomaly accounted for 1.03% prevalence. Darwazeh
et al., (1998) reported a prevalence of 8% taurodontism in Jordanian dental patients. Pillai et al., (2007) reported prevalence of 11.28% of this anomaly in Trinidadian patients. Hazza, (2006) in Jordan reported that taurodontism is a common radiographic finding in major thalassemic patients(34%) and maxillary first molar is the most affected tooth. Ezoddini in Iran, (Ezoddini et al., 2007) found that taurodontism is more prevalent in Yazdi patients (7.5%). Our results showed that taurodontism is uncommon in Shiraz, but further studies are required to assess its prevalence in the general population.

As mentioned previously, abnormal variations in many cases are due to genetic,environmental and pathological factors, or might be part of systemic or syndromic disorders and should be followed. Recognizing these anomalies will facilitate the endodontic, prosthodontic, periodontic and surgical management of such teeth.

**Conclusion:**

Data from this study and their comparison to many studies showed that different dental anomalies occur with different frequencies in many countries of the world and even within the same country among different ethnic or regional groups. As with other developmental traits in humans, these anomalies are under genetic and environmental control, hence, the regional differences.

While the overall prevalence of each of these anomalies in the dental clinic or population groups may be low, their presence may, in some cases create a management problem or complicate treatment options for patients. Therefore their diagnosis and management are of importance for general patient management.

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**REFERENCES**


