Epidemiology of orofacial pain: A retrospective study

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Abstract

Background: The orofacial pain is a pervasive situation either of somatic or psychological etiology arising from the structures supplied by the trigeminal nerve. Identifying the cause of orofacial pain goes a long way in diagnosis and treatment.

Objectives: To evaluate the cause of pain among the subjects reporting to the dental college.

Materials and Methods: A retrospective study was conducted on a group of patients with persistent facial pain with an ebb to respond properly to previous treatments were assigned to specialists associated with Department of Oral Medicine and Radiology and Oral and Maxillofacial surgery in Sri Rajiv Gandhi College of Dental Sciences and Hospital from March 2010-April 2011.

Results: It was found that pulpitis was the most common cause of orofacial pain followed by periodontal pain. Neuralgias and TMJ disorders were the least likely cause.

Conclusion: Multidisciplinary approaches and a biopsychosocial model of pain management are an essential adjunct to established evidence-based medical and surgical management of these conditions.

Keywords
Epidemiology, orofacial pain, pulpitis, trigeminal system

Introduction

Pain is defined as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage by activation of nociceptors, which transmits a noxious stimulus to the brain.”¹ The field of dentistry has introduced a detailed study over a number of years for the betterment of a group of subjects who had experienced orofacial pain, but were unable to appreciate its genesis.²

Conveyance of pain by the trigeminal system

Pain sensation from the intraoral and extraoral structures of the head and face are carried to the central nervous system by the trigeminal system, which consists of both sensory and motor innervations [Figure 1]. Sensory information from the face and mouth is carried by primary afferent neurons through the trigeminal ganglion to synapse with second order neurons in the trigeminal brain stem complex which receives afferent neurons and axons from the facial, glossopharyngeal, vagus, and the upper cervical (C2, C-3) nerves originating “orofacial pain [Figure 2].”³⁴

Background and objectives

Assessing the severity of pain the subject encounters are essential to diagnosis. Thus, the study is targeted to verify the number of cases reported with pain complaints.⁵

Methodology

A retrospective study was conducted on a group of patients with persistent facial pain with an ebb to respond properly to previous treatments were assigned to specialists associated with Department of Oral Medicine and Radiology and Oral and Maxillofacial surgery in Sri Rajiv Gandhi College of Dental Sciences (SRGCD) and Hospital from March 2010-April 2011. The records of 2200 consecutive patients were analysed, where 1298 were females, and 902 were males. Patients were selected according to the history of the chronic pain symptoms and classified according to the criteria of the international association for the study of orofacial pain. This study was carried out with the approval of the institution’s research Ethical Committee. The patient’s data were obtained as per their medical records in the Orofacial Pain Clinic, SRGCDSH. Consistency was maintained was maintained in the interview method by trained graduate students who applied standardized questionnaires and a systematic evaluation of cranial, facial, cervical, dental, and other oral structures in accordance to a definite clinical pattern to detail: (a) Chief
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complaint; (b) characteristics exhibited by the pain, if the chief complaint is pain (location, intensity, quality, duration, time of pain severity); (c) incidence of headache (d) medical history of the patient. This was followed with a thorough evaluation based of clinical and roentgenographic assay.\(^{[5,6]}\)

**Study period and study location**

The study was conducted on the patients who visited Oral and Maxillofacial Surgery Department of SRGCDS, Bangalore from March 2010 to April 2011.

**Number of patients under study**

The study was conducted with 2200 patients with a complaint of orofacial pain who resided in the nearby rural and urban areas [Table 1].

**Results**

Results of international epidemiologic studies indicate that the orofacial pain occurs in approximately 10% of the adult population with a greater predilection to women [Graph 1]. Most studies show a decline of prevalence in older age. Based on the oro facial pain study was conducted. Overall, 2200 patients were evaluated. Mean age of the total sample was 33.5 ± 13.8 years, being 33.9 ± 13.9 for females and 31.7 ± 13.1 for males. In total 59% (1300) of the orofacial pain patient group were females and 41% (900) males; indicating at higher prevalence of orofacial pain in the female group [Table 2].

Most prevalent reason for orofacial pain in the study patient group was Pulpitis with 946 or 43% of the patients. A total of 704 patients or 32% had periodontal pain as a reason for orofacial pain. Relatively low percentage of patients 286 or 13% had pericoronitis as a reason for the pain whereas victims affected by temporomandibular joint (TMJ) disorder. Dysfunction and neuralgia were 176 or 8%.

“Others” categories were the least observed with 88 or 4% of the patients. This group comprised of persons suffering from traumatic injuries, squamous cell carcinoma, salivary gland carcinoma, craniofacial pathology neoplasm, etc., [Graph 2].

The aforementioned trend was followed in the male and female gender group as well with 49% of females and 47% of males having pulpitis as the primary reason for orofacial pain. Relatively higher percentage of male patients had periodontal pain as a reason for orofacial pain. At an overall level for both male and females pulpitis was the main reason for orofacial pain [Table 3].

**Table 1: Differential diagnosis of pain frequently observed in orofacial region\(^{[6]}\)**

<table>
<thead>
<tr>
<th></th>
<th>Idiopathic trigeminal neuraglia</th>
<th>Pulpitis (referred dental pain)</th>
<th>Orofacial neoplasia</th>
<th>Temperomandibular disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Electric, shock like</td>
<td>Throbbing</td>
<td>Variable (atypical)</td>
<td>Dull, stabbing</td>
</tr>
<tr>
<td>Pain duration</td>
<td>Seconds</td>
<td>Minutes-hours</td>
<td>Variable</td>
<td>Minutes-hours</td>
</tr>
<tr>
<td>Intensity</td>
<td>Severe</td>
<td>Slight-severe</td>
<td>Severe</td>
<td>Moderate</td>
</tr>
<tr>
<td>Localization</td>
<td>Good</td>
<td>Diffuse</td>
<td>Good, diffuse</td>
<td></td>
</tr>
<tr>
<td>Characteristics</td>
<td>Triggerzone-diurnal</td>
<td>Diurnal or nocturnal dental sensitivity</td>
<td>Referred pain frequently, neurological signs, WBC abnormality</td>
<td>TMJ disorder/muscle pain with movement, limited mouth opening</td>
</tr>
<tr>
<td>Local treatment</td>
<td>No</td>
<td>Specific dental treatment, LA to block pain</td>
<td>Surgical</td>
<td>Physical therapy, splints, anesthetic injections</td>
</tr>
<tr>
<td>General treatment</td>
<td>Anticonvulsant</td>
<td>NSAIDS analgesics</td>
<td>Chemotherapy, radio-therapy, HSCT</td>
<td>NSAIDS</td>
</tr>
<tr>
<td>Trigger</td>
<td>Non noxious stimulus</td>
<td>Food, cold, heat</td>
<td>Jaw movement</td>
<td>Palpation, jaw function</td>
</tr>
</tbody>
</table>


**Figure 1: Conveyance of pain by trigeminal system**

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Figure 2: Classification of orofacial pain

Graph 1: Gender distribution of patients

Table 2: Causal distribution of orofacial pain

<table>
<thead>
<tr>
<th>Type of orofacial pain</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulpitis</td>
<td>946</td>
<td>43</td>
</tr>
<tr>
<td>Periodontal pain</td>
<td>704</td>
<td>32</td>
</tr>
<tr>
<td>Pericoronitis</td>
<td>286</td>
<td>13</td>
</tr>
<tr>
<td>TMJ disorder dysfunction and neuralgia</td>
<td>176</td>
<td>8</td>
</tr>
<tr>
<td>Others</td>
<td>88</td>
<td>4</td>
</tr>
</tbody>
</table>

TMD: Temporomandibular joint

Graph 2: Comparison of varied orofacial pain between male and female group

Table 3: Various types of orofacial pain affecting the male and female population

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Female</th>
<th>Female %</th>
<th>Male</th>
<th>Male %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulpitis</td>
<td>1060</td>
<td>637</td>
<td>49</td>
<td>423</td>
<td>47</td>
</tr>
<tr>
<td>Periodontal pain</td>
<td>661</td>
<td>364</td>
<td>28</td>
<td>297</td>
<td>33</td>
</tr>
<tr>
<td>Pericoronitis</td>
<td>259</td>
<td>169</td>
<td>13</td>
<td>90</td>
<td>10</td>
</tr>
<tr>
<td>TMD and neuralgia</td>
<td>110</td>
<td>65</td>
<td>5</td>
<td>45</td>
<td>5</td>
</tr>
<tr>
<td>Others</td>
<td>110</td>
<td>65</td>
<td>5</td>
<td>45</td>
<td>5</td>
</tr>
</tbody>
</table>

TMD: Temporomandibular dysfunction

Discussion

Various facets would collaborate within the human body to identify the onset of the disease, its pattern of progression, and the development of continuous pain. Disparate milieu like various lifestyles, stress factors and gender, are also essential
variables. Our study conducted has shown an increase in the number of females seeking treatment for orofacial pain, by which we could suggest that females are more prone to developing pain. Both male and female hormones may contribute to gender-related discrepancies in the origin of musculoskeletal pain.

**Conclusion**

Higher prevalence of orofacial pain was witnessed among the female patient group. Most prevalent reason for orofacial pain in the subjects observed was pulpitis with 946 or 43% of the patients. TMJ dysfunction, neuralgia and others-namely neoplastic were the least observed. Multidisciplinary approaches and a biopsychosocial model of pain management are an essential adjunct to established evidence-based medical and surgical management of these conditions.

**References**


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