FREQUENCY OF SINO-NASAL ABNORMALITIES AND ASSOCIATED SOCIO-DEMOGRAPHIC FACTORS AMONG THE PATIENTS PRESENTING WITH CRANIOFACIAL PAINS AT ENT DEPARTMENT

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ABSTRACT

Objective: To determine the frequency of sino-nasal abnormalities and associated socio-demographic factors among the patients presenting with craniofacial painat ENT department of a tertiary care hospital of Pakistan
Study Design: Cross-sectional study.
Place and Duration of Study: Department of ENT, Combined Military Hospital Rawalpindi, Six months, from 22nd May 2017 to 21st Nov 2017.
Methodology: A total of 200 patients were included in the study with presentation of craniofacial pain at ENT department of Combined Military Hospital Rawalpindi. Detailed history and ENT examination was carried out to look for the sino-nasal cause of craniofacial pain. Computed tomographic (CT) scans of the sinuses and preliminary diagnostic nasal endoscopy was performed on the selected cases. Relationship of age, gender, smoking status and history of trauma was observed with the presence of sino-nasal cause of craniofacial pain.
Results: Out of 200 patients of craniofacial pains, 130 had presence of a sino-nasal abnormality. Eighty patients were males and 50 were females. Mean age of the study participants was 34.86 ± 4.845 years. Most common sino-nasal abnormality found among these patients was deviated nasal septum (DNS) followed by nasal polyps and chronic sinusitis. Smoking and history of trauma were associated with the presence of sino-nasal cause among the patients of craniofacial pains when binary logistic regression was applied.
Conclusion: Sino-nasal abnormalities constituted a major cause of craniofacial pains among the patients reporting in the ENT OPD. Special attention should be paid to the patients who smoke cigarettes and those who had history of facial trauma.

Keywords: Craniofacial pains, Frequency, Sino-nasal, Socio-demographic factors.

INTRODUCTION

According to the international guidelines craniofacial pain is a topographic term, which includes a great diversity of painful conditions in the cranium and face[1]. Pain can be defined as "It is an unpleasant sensory and emotional experience with actual or potential tissue damage, or described in terms of such damage"[2]. Population studies have shown that the prevalence of oral complex and craniofacial pain is high, and associated with various medical conditions also including the ischemic heart disease[3]. Epidemiological surveys done in various parts of the worldincluding United States, Canada and United Kingdom have observed that the frequency of orofacial pain in general adult population may vary from 14 to 40%[4-7].

Various primary and secondary causes of craniofacial pains have been studied in the past including the central and the peripheral causes[1]. Pain due to both these causes need to be dealt separately according to the cause. The epidemiology of the central causes of facial pain is still unclear, but it is known that persistent idiopathic facial pain is a widespread, not easily manageable problem posing a significant stress on the health care system[3,4]. Craniofacial pains attributed to Nasal/paranasal causes include acute rhinitis, chronic rhinitis, nasal polyps, nasal Septum deviation, turbinate hypertrophy, contact point

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headache, nasal fracture,nasal papilloma, naso-pharyngeal carcinoma and boil nose[4,6]. A study done in Egypt concluded that multiple sino-nasal anomalies were noted by endoscopy and sinus computed tomographic scans among the patients suffering from headache and craniofacial pains. Correction of these abnormalities was linked with significant improvement in the pain and quality of life of the patients which were suffering from these pains for a long time[8].

Mechanism by which sino-nasal anomalies produce the craniofacial pains is unclear and complex. Multiple theories have been postulated including the negative pressure leading to the vacuum headache and facial pain, compression of the anterior ethimoidalnerve causing the symptoms of craniofacial pain and the neuropeptide theory stating substance P and other neuropeptides responsible for the pain[13]. Stammberger and Wolfe proposed that chronic inflammation of the lining of the sinuses is one of the major causes of headaches among the sino-nasal causes[14]. Whatever the cause may be, these pains remain the source of discomfort and poor quality of life among the individuals suffering from them[7,10].

In Pakistan limited work had been conducted to estimate the burden of craniofacial pains and to look for the sino-nasal causes responsible for them but various studies were conducted to evaluate the incidence and prevalence of headache and the orofacial pains. Prevalence of orofacial pains was 43% in a study done in Karachi with lower jaw being the commonest side[11,12]. A large study done on local population revealed that headache was chief complain of 76.6% of the participants[13].

This study was planned with the objective to look for the frequency of sino-nasal causes and associated socio-demographic factors among the patient presenting with headache at ENT outpatient department (OPD) of a tertiary care hospital of Pakistan.

METHODOLOGY

This cross-sectional study was conducted at the department of E.N.T Combined Military Hospital Rawalpindi from 22nd May 2017 to 21st Nov 2017. Sample size was calculated by World Health Organization (WHO) Sample Size Calculator incorporating a similar study done in recent past to get the values for the formula used by the WHO calculator[9]. Non probability Consecutive sampling technique was used to enroll the sample for the study. All patients between the age of 18 and 65 with craniofacial painswere included in the study. Exclusion criteria were the patients with already diagnosed neurologic problem, such as migraine, cluster headache, or brain tumor or with chronic pain caused by ophthalmologic or ENT disease. Patients who were pregnant or those who not give consent to get enrolled into this study were also excluded in the initial phase.

Ethical approval was obtained from the Ethical review board committee of the hospital in which study was planned and conducted. After written informed consent, patients of craniofacial pains coming to E.N.T outpatient department directly or referred from other OPDs at Combined Military Hospital Rawalpindi were included in the study. All patients underwent detailed history taking and rhinologic, neurologic, and ophthalmologic evaluation. Neurologic and ophthalmologic evaluation included routine examination of the patients to screen them for the presence of any ophthalmic or neurological cause of headache and exclude them from the study in the initial phase. Otolaryngological investigations included complete cut computed tomographic (CT) scans of the sinuses and preliminary diagnostic nasal endoscopy. Visual Analogue Scale (VAS) was administered to the patients included in the study to assess the severity of pain. Socio-demographic characteristics were entered in a performa specially designed for this study. Detailed history was obtained regarding the trauma and its impact on the sino-nasal region. Tobacco smoking was also asked directly from the study participants. Routine smokers were classified as smokers in the study.

All statistical analysis was performed by using the Statistics Package for Social Sciences version 23.0. Frequency and percentages calcula-

ted for qualitative variables. Descriptive statistics were used to describe the risk factors and the distribution of the patients suffering from sino-nasal causes. Patients were identified under the categories of sino-nasal causes and non sino nasal causes. Binary logistic regression analysis was done to evaluate risk factors related to the presence of sino-nasal causes. Differences between groups were considered significant with *p*-value<0.05.

RESULTS

A total of 220 patients who presented with headache were approached for the study. After applying the inclusion/exclusion criteria 20 patients were dropped out (05 did not give consent, 03 were pregnant, 08 were already diagnosed cases of primary headache by the neuro-physician, and 04 could not complete the study questionnaire). Out of 200 patients included in the study, 130 had a definitive sino-nasal caused confirmed on physical examination or relevant radiological investigation. Mean age of the study participants was 34.86 ± 4.845 years.

Table-I: Baseline characteristics of the study patients and types of sino-nasal anomalies (n=200).

Age (years)	
Mean ± SD	34.86 ± 4.845
Range (min-max)	15-65 years
Average duration (Years)	
Mean ± SD	2.5 ± 1.5
Range (min-max)	0.4-12
Gender	
Male	135 (67.5)
Female	65 (32.5)
Type of sino-nasal anomaly	
DNS	51 (25.5)
Nasal Polyps	32 (16)
Chronic Sinusitis	29 (14.5)
Others	18 (9)

Among the sino-nasal causes most common abnormality was deviated nasal septum followed by nasal polyps and chronic sinusitis (table-I). Smoking and history of trauma had a strong association with presence of a sino-nasal anomaly among the patients of craniofacial pains when binary logistic regression was applied (table-II).

DISCUSSION

Headaches and craniofacial pains are one of the commonest symptoms which general physicians, neurologists, neurosurgeons, ENT specialist and psychiatrist encounter in their clinics. Sino-nasal abnormalities have been linked with the craniofacial pains among various studies done in the past in various parts of the world[14-16]. Using the methods of routine examination and relevant investigations, we found that 65% of our subjects showed the presence of sino-nasal pains among the patients of headache which is in accordance with the past literature[17,18]. Reason behind these may be related to physical effects of the structural abnormality, associated inflammation and chronicity of disease.

Presence of craniofacial pain or headache among the patients suffering from nasal/ paranasal abnormalities has been supported by local as well as foreign data[19,20]. Our study also revealed a high percentage of patients suffering from sino-nasal causes and not picked by the general physicians or neurologist. This reflects that the study participants have been living so long with this much pain and disability. Despite bearing the cost and side effects of the medication, patients were not getting any marked benefit in the reduction of their craniofacial pain. This highlights the importance of early recognition of the sino-nasal causes and offering them definitive surgical management to decrease their

Table-II: The correlated factors relating to the presence of sino-nasal causes: the binary logistic regression.

	p-value	Odds ratio	Confidence interval	
			Lower	Upper
Age (ref. is <35 years)	0.498	0.795	0.410	1.542
Gender (reference is male)	0.485	1.272	0.648	2.497
Smoking (ref. is non smokers)	0.000	3.679	1.920	7.050
History of trauma (ref. is no history of trauma)	0.017	2.526	1.183	5.393

pain and disability and improve their overall quality of life.

Physical causes of nasal/paranasal abnormalities can contribute to the headache or craniofacial pains. Usually general physicians or neurologist are the first persons to whom these patients report. Nasal blockage and pressure effects can be troublesome for the patient and cause pain in head and face region[21,22]. Structural abnormality itself, collection of fluid or pus, decreased air entry, and long duration of unsuccessful medical treatment can contribute in predisposing the patient towards the chronic craniofacial pain[21]. Headache or chronic pain issues affect the overall quality of life of the patient and also contribute in non-compliance towards the medical treatment which can be devastating for the patient. Therefore pain need to be addressed in time for improving the over- all quality of life of the patient suffering from chronic craniofacial pain of nasal/para nasal origin[23,24]. Usually these pains do not respond to medical treatment well and patients have to be evaluated for the surgical management. Delay in referral to the ENT department and lack of understanding of these causes among the general physicians and other specialty doctors may delay the definitive management of these patients suffering from chronic pains of head and neck origin.

Various studies in past concluded that history of trauma has been associated with the presence of sino-nasal abnormalities[25]. Results in our study are similar to these studies. Trauma in nasal origin may cause structural abnormality in this region which can give rise to sensation of pain and discomfort. DNS including the nasal spur was the commonest cause of chronic craniofacial pain of nasal/paranasal origin in our setup followed by the nasal polyps. It is also in accordance with the existing literature[26]. It is also worth mentioning that DNS is a very common deformity and operated in routine in the ENT set ups. Therefore if a patient is suffering from a chronic pain and his GP recognizes the problem and send the patient early to a tertiary care facility, a lot of misery could be avoided by the patient.

Age and gender had no significant association with persistent pain in our study. Most of our patients were male. Lesser number of females and narrow age group may be the cause of lack of association. Smoking was strongly related with the presence of sino-nasal cause among the patients of craniofacial pains. Chronic rhino sinusitis is a common anomaly among the smokers.

The major limitation of our study was that it was not prospective so we cannot hypothesize that headache or craniofacial pain was a consequence of abnormality of nose or para nasal sinuses. The sample size, and use of self administered questionnaires pose methodological issues as well. The findings cannot be generalized as this was not a population based study. A specific group of patients in a tertiary care hospital was targeted instead of a randomized sample of all the patients of craniofacial pains at various hospitals of Pakistan. Moreover surgery and post treatment follow-up was not part of study design to ascertain the definitive link between Sino nasal anomaly and headache. We suggest further studies on a broader based and a more representative sample size using locally developed and standardized psychometric tools in subsequent studies on the subject.

CONCLUSION

Sino-nasal abnormalities constituted a major cause of craniofacial pains among the patients reporting in the ENT OPD. Special attention should be paid to the patients who smoke cigarettes and those who had history of facial trauma.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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