International Journal of Otorhinolaryngology and Head and Neck Surgery
Rajasekaran V et al. Int J Otorhinolaryngol Head Neck Surg. 2017 Oct;3(4):1027-1030
http://www.ijorl.com
pISSN 2454-5929 | eISSN 2454-5937

Original Research Article

DOI: http://dx.doi.org/10.18203/issn.2454-5929.ijohns20174326

A study on clinical profile of non otogenic otalgia

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Received: 01 July 2017
Accepted: 25 July 2017

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ABSTRACT

Background: Ear pain can be because of pathologies in the ear or in the surrounding head and neck region. This is because of rich innervations of the ear. Sometimes it poses a diagnostic challenge.
Methods: A cross sectional study was conducted in our institute where patients with ear pain were evaluated. Those with non otogenic causes were included in the study. 59 patients were identified and studied for the underlying cause. The sociodemographic profiles of the patients with varying etiologies were studied.
Results: The most common cause for referred pain was temporomandibular joint dysfunction. This was more common in 15-45 years and in older age group cervical spondylosis was more common. There was no significant sex predominance.
Conclusions: Careful detailed evaluation of the patient should be done to identify the exact underlying cause and treat effectively.

Keywords: Referred otalgia, Temporomandibular joint dysfunction, Cervical spondylosis

INTRODUCTION

Otalgia is a very common presentation in ENT outpatient department. Most of the time the underlying cause is from the ear which is referred as primary otalgia. There are quite a number of causes that can present as otalgia and the ear looks normal in otoscopy. These are called secondary or referred otalgia.[1,2] This is because of complex nerve innervations of the ear.

The pain is caused by nerve compression or irritation. In referred pain, the sensation of pain will generally be felt in the somatic dermatome even though the stimuli are from the visceral tissue.[3] The ear is supplied by four cranial nerves (CN V, VII, IX, and X) and two superior cervical plexus nerves (C2 and C3).[4] These nerves also supply a lot of structures in head and neck. This rich innervation of the ear explains the central misinterpretation of the origin of pain arising from the head and neck and is the basis for referred otalgia.

Among the nerves responsible for referred otalgia, the most common nerve involved is trigeminal nerve. In Bell's palsy ear pain is considered as referred otalgia which is by nervi nervorum of facial nerve.[5] Sometimes it could be psychogenic or malingering where no organic lesions could be made out.

This purpose of the study is to identify the various possible non otogenic causes and its various characteristics which will help in better evaluation of patients.

METHODS

This study was a cross sectional study on patients who had presented to the ENT department, Shri Sathya Sai

Medical College & Research Institute between June 2015 – June 2016 with otalgia. Of the patients who presented with otalgia (207), 148 patients had otogenic causes. The patients who had non otogenic causes (59) were included in the study. The distribution of various etiologies in these patients were categorised and tabulated. The data regarding the age, the sex distribution, the laterality and the nerves responsible in relation to various etiologies were collected and tabulated.

Statistical analysis was done using Fischer's extact test for significant difference between the differences in various age group, both sexes and the side involved. P<0.05 was considered as significant.

RESULTS

There were 207 patients who had presented to ENT department with ear pain. Of these patients 148 patients had pathology in the ear (71.5%). The remaining 59 patients (28.4%) were analysed.

The most common non otogenic cause was found to be temporomandibular dysfunction (39%). Other causes in descending order of frequency were cervical spondylosis (23.7%), dental caries (11.8%), pharyngitis (5.1%), Eagle's syndrome (5.1%), impacted molar (3.4%), carcinoma oropharynx (3.4%), acute tonsillitis, peritonsillitis, glossopharyngeal neuralgia, Bell's palsy psychogenic (1.6%) (Table 1). There were 2 cases of malignancies, one along posterior third tongue other along tonsilolingual sulcus which was biopsied and confirmed histologically. Both cases had presented with ear pain.

Secondary causes of otalgia were seen in adults between 45-60 yrs of age (45.8%). In older patients always rule out an underlying malignancy. No cases of secondary otalgia were reported in paediatric age group (<15 yrs) (Table 2).

Table 1: Causes of non otogenic otalgia.

Etiology	No. of cases (n)	Percentage (%)
Temporomandibular joint dysfunction	23	39
Dental caries	7	11.8
Impacted molar	2	3.4
Cervical spondylosis	14	23.7
Pharyngitis	3	5.1
Acute tonsillitis	1	1.6
Peritonsillitis	1	1.6
Eagle's syndrome	3	5.1
Glossopharyngeal neuralgia	1	1.6
Bell's palsy	1	1.6
Carcinoma oropharynx	2	3.4
Psychogenic	1	1.6

Table 2: Distribution of non otogenic otalgia in various age group

Etiology	15-30 yrs n, (%)	31-45 yrs n, (%)	46- 60 yrs n, (%)	>60 yrs n, (%)	P value
Temporomandibular joint dysfunction	2 (16.7)	12 (63.2)	9 (33.4)	0	0.042*
Dental caries	3 (25)	1 (5.3)	3 (11.1)	0	0.404
Impacted molar	2 (16.7)	0	0	0	0.044*
Cervical spondylosis	0	3 (15.8)	11 (40.7)	0	0.014*
Acute tonsillitis	1 (8.3)	0	0	0	0.044*
Pharyngitis	2 (16.7)	1 (5.3)	0	0	0.263
Peritonsillitis	1 (8.3)	0	0	0	0.044*
Eagle's syndrome	0	0	2 (7.4)	1 (100)	0.000
Glossopharyngeal neuralgia	0	0	1 (3.7)	0	0.752
Bell's palsy	0	1 (5.3)	0	0	0.544
Carcinoma oropharynx	0	1 (5.3)	1 (3.7)	0	0.881
Psychogenic	1 (8.3)	0	0	0	0.263
Total	12	19	27	1	

* Statistically significant

Table 3: Distribution of non otogenic otalgia in both sex.

Etiology	Males	%	Females	%	P value
Temporomandibular joint dysfunction	11	37.9	12	40	0.378
Dental caries	4	13.8	3	10	0.652
Impacted molar	0	0	2	6.7	0.157
Cervical spondylosis	8	27.5	6	20	0.493
Pharyngitis	1	3.5	2	6.7	0.574
Acute tonsillitis	1	3.5	0	0	0.305
Peritonsillitis	0		1	3.3	0.321
Eagle's syndrome	2	6.9	1	3.3	0.533
Glossopharyngeal neuralgia	0	0	1	3.3	0.321
Bell's palsy	0	0	1	3.3	0.321
Carcinoma oropharynx	2	6.9	0	0	0.143
Psychogenic	0	0	1	3.3	0.321
Total	29	0	30		

Table 4 : Distribution of non otogenic otalgia in terms of laterality

Etiology	Bilateral	Unilateral- right	Unilateral- left	P value
Temporomandibular joint dysfunction	5	8	10	0.878
Dental caries	0	2	5	0.224
Impacted molar	0	1	1	0.782
Cervical spondylosis	3	6	5	0.771
Pharyngitis	1	2	0	0.288
Acute tonsillitis	0	0	1	0.524
Peritonsillitis	0	0	1	0.524
Eagle's syndrome	1	2	0	0.288
Glossopharyngeal neuralgia	0	0	1	0.524
Bell's palsy	0	0	1	0.524
Carcinoma oropharynx	0	1	1	0.782
Psychogenic	1	0	0	0.109
Total	11	22	26	

Table 5: Distribution of non otogenic otalgia along various nerves

Nerve	No. of cases	Percentage (%)
CRN V	32	56.1
CRN VII	1	1.8
CRN IX	11	19.3
Cervical plexus	14	24.6
Total	57	

There were no sex differences in etiology. In both sexes most common cause was TMJ dysfunction, followed by cervical lesions (Table 3).

Most patients had unilateral ear pain. There was no predilection for any side. Only 10 patients had pain in both the ears (Table 4).

The most common nerve responsible for ear pain was auriculotemporal branch of trigeminal nerve (CN V), (56%) followed by cervical spine lesions (Table 5).

In 15-30 years, impacted molar, acute tonsillitis and peritonsillitis were more common. In 31-45 years, temporomandibular joint dysfunction was common and in46-60 years cervical spondylosis was common ($p<0.05$). There was no significant difference between both sexes and the side involved.

DISCUSSION

The most common cause of ear pain was otalgic causes. The referred pain was most commonly due to temporomandibular dysfunction. The most common age of presentation was 46-60 years of age where cervical spondylosis was the most common cause followed by temporomandibular dysfunction.

In our study, of the patients who had presented with ear pain only 28.4% had pathology outside the ear. This is in accordance with findings of Kiakojoori et al, where the incidence of referred otalgia was reported as 30.6%.[6] In study by Mohammad Hosein et al, the incidence of referred otalgia was only 12.2%.[7]

In our study the most common age of presentation was around 46-60 yrs of age and no cases were reported in children. This is consistent with findings of Neilan's et al.[8] In study by Mohammad Hosein et al, the most common age of presentation was 21-35yrs.[7]

In our study, 50.8% of the patients were women and 49.2% were men. In study by Kim et al, the incidence was similar in both sexes which was consistent with our study.[14] In study by Kiakojoori et al and Mohammad Hosein et al, incidence was more in females.[6,7]

According to our study, the most frequent etiology of referred otalgia was found to be temporomandibular dysfunction (39%), cervical spine lesions (23.7%), and dental problems (11.8%). In study by Hosein et al, Kiakojoori et al and Kim et al toothaches was the most common cause of the referred otalgia.[6,7,9] In Behnoud et al's study, the most frequent etiology was reported to be the temporomandibular joint dysfunction.[10] In our study, 2 cases of oropharyngeal malignancy (posterior third tongue and tonsilolingual sulcus) were identified. In Mohammad Hosein's study there was only one patient with supraglottic carcinoma.[7] In study by Reiter et al, there was a case of nasopharyngeal carcinoma manifesting as referred otalgia.[11] In study by Mulwafu's et al, on 17 patients suffering from the carcinoma of the base of the tongue, 33% of the cases suffered from referred otalgia.[12] In Kiakojoori et al's study, 6% of the etiologies of referred otalgia were reported as pharyngeal carcinoma.[6]

Hun reported one case of Bell's palsy, first manifested itself as otalgia with no other findings in the examination.[5]

In our study, unilateral otalgia was more common than bilateral otalgia. There was no difference between both sides. This is consistent with other studies.[13,14]

According to our study, the most common nerve responsible for referred otalgia was trigeminal nerve. This is in accordance with previous studies.[15]

CONCLUSION

In this study the most common cause is odontogenic followed by cervical lesions. Sometime an isolated ear pain could be the telltale sign of an early upper aero digestive tract malignancy. Neuralgic pain can also present with ear pain. So in patients presenting with ear pain through examination of dentition and cervical spine should be done in addition the routine ear, nose, throat and neck examination. Most cases presented in 5th and 6th decade. There are no much differences in presentation in both sexes and laterality

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Rajasekaran V, Sharath KBV. A study on clinical profile of non otogenic otalgia. Int J Otorhinolaryngol Head Neck Surg 2017;3:1027-30.