

Outlook to OTALGIA: Is it Restrictive or Referred



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Abstract

Introduction: Otalgia can be a concern of otologic disease (primary or otogenic) or can arise from various pathologic processes and structures stemming from other regions around ear (secondary or referred). In children, ear disease is the most common cause of otalgia, but in adults secondary or referred otalgia is more common. Otalgia can be the only presenting symptom in several serious conditions but its aetiology is not usually fully explored. Unfortunately, it has a complex workup module and there is no simple algorithm for its management.

Aims and Objectives: To find out cause for otalgia, commonest region of distribution and its presentation based on symptomatology. This topic is of interest as otalgia though common in occurrence & incidence but is still yet unexplored and unknown as well.

Methodology: All 928 patients who presented with various ENT and Head & Neck causes were aptly attended, clinically considered and deliberately diagnosed.

Results: Ear topped the list for causes of otalgia on individual analysis while referred topped the list when compared with combined causes for otalgia with more affection seen in adults and children.

Conclusions: Otalgia, though just seems a mere simple symptom but can point to many diverse and intricate analysis which must be considered to the earliest and is a hint for at least primitive cure.

Keywords: Otalgia; Otologic; Otogenic; Referred; Restrictive

Introduction

Otalgia, one of the most common symptom one can come across in the ENT OPD which can be both dicey & dubious as well as can be dangerous sometimes. It occurs as a significance to otologic disease or result from any pathologic course and structures around or along ear. There is a varied aetiology ranging from OME to OMS on one end while OSMF to Oral cancers on the other end [1,2]. Otalgia, at-times can be the only presenting symptom in several severe situations but its aetiology is very often remains unexplored and unkempt. Tactlessly, it has a multifaceted workup module and complex algorithm for its management [3].

Aims & Objectives

- To find out the various causes of otalgia both otologic as well as non-otologic.
- To look for commonest region involved for this symptom to represent in terms of disease progression.
- To classify otalgia based on its clinical presentation.

- To categorise otalgia into both restrictive as well as referred groups.

- To evaluate disease with relevance to symptom based on gender & age predisposition of occurrence in terms of ratio.

Objective

It is to tap the unexplored and untouched areas of Otalgia so far as per literature review.

Materials & Methods

Study Design

Descriptive study.

Place of study

Tertiary Care Hospital, Subbaiah Institute of Medical Sciences, Shimoga.

Study Period

1 year (from June 2018 to May 2019).

Selection Criteria

A random sample of 928 patients (pts) who consulted the ENT outpatient department with otalgia as one of the symptomatology were clinically assessed, accurately evaluated and precisely diagnosed. While rest of the cases were rightly classified and referred to various interdepartmental units for further assessment and management.

Inclusion Criteria

Age group from 5-70 years were considered for the study. All cases of Ear, Nose, Throat with Head & Neck pathology. Only Pre-operative cases were considered for the study.

Exclusion Criteria

Age group of < 5years and >70 years were excluded from the study.

Cases Excluded

List- Dental pathology, Lung & Cardiac pathology, Postoperative

cases, and musculoskeletal causes.

Procedure of the Study

Over a period of 1 year, a random sample of 928pts who consulted ENT outpatient department with otalgia as one of the symptom were clinically evaluated after taking a detailed & thorough history. Following which a probable diagnosis was made. The relevant investigations; wherever necessary were done to arrive at a diagnosis.

Treatment was given based on the diagnosis, which was mainly conservative line of management. Surgical line of management was adapted wherever and whenever needed. They were then followed up for about 6-8 months now. Patients have responded well to treatment when followed up. Informed written consent was taken during the study period. Ethical clearance has been taken from Institutional Ethics Committee before the start of the study.

Results

The observations drawn from the study are depicted in the form of results by means of diagrammatic as well as tabular representation below (Figure 1-5) Tables (1- 4A & 4B).

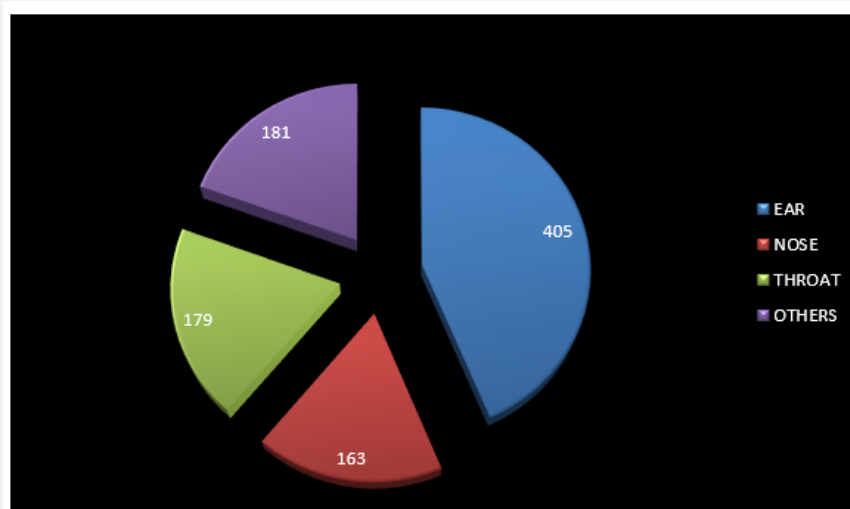


Figure 1: Pie diagram showing in gist the causes leading to otalgia.

Discussion

Cranial nerves (V, VII, IX, X) with cervical nerves (II & III) have a rich sensory supply to the ear. Due to this intense innervation by nerves, Otalgia is most often encountered clinical symptom during disease pathology. Otalgia is defined as ear pain which can be due to diseases within the ear per se or due to abundant disorders from closely linked structures around ear supplied by these nerves. It can be classified as primary or secondary (referred)

[4,5]. Primary otalgia is ear pain that originates within ear, whereas Referred otalgia is the pain felt in the ear from various structures outside supplying the ear as well. Hence, it is mandate to take a meticulous history, comprehensive clinical examination to determine whether otalgia is primary or referred, physical examination of adjacent structures should be performed which is crucial. These four cranial nerves along with cervical nerves II and III are also distributed to other regions of the body as well as the ear (Table 5).

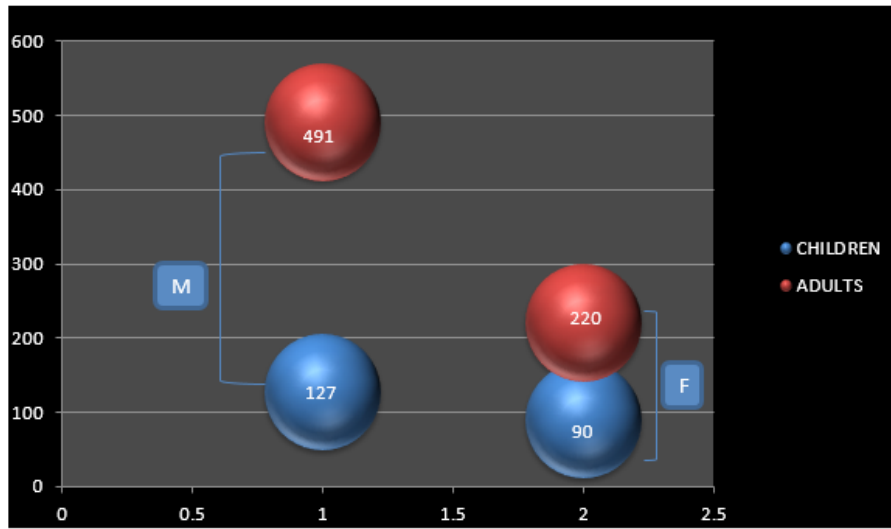


Figure 2: 3D effect of Bubble interpretation showing the total population in terms of gender and age included in the study.

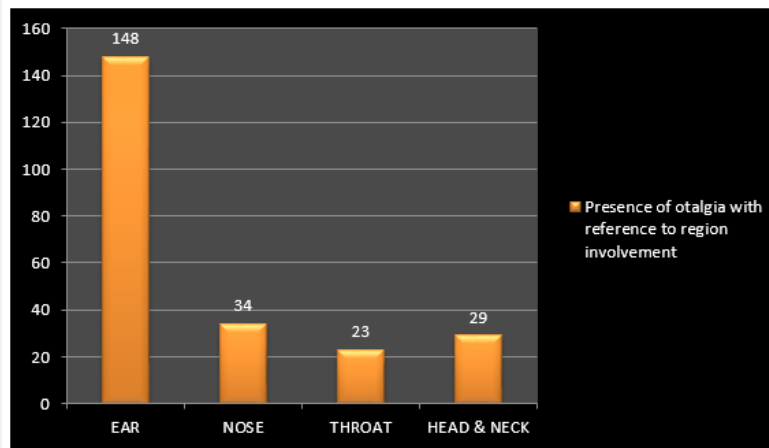


Figure 3: Stacked column illustration showing otalgia pertaining to different region involvement.

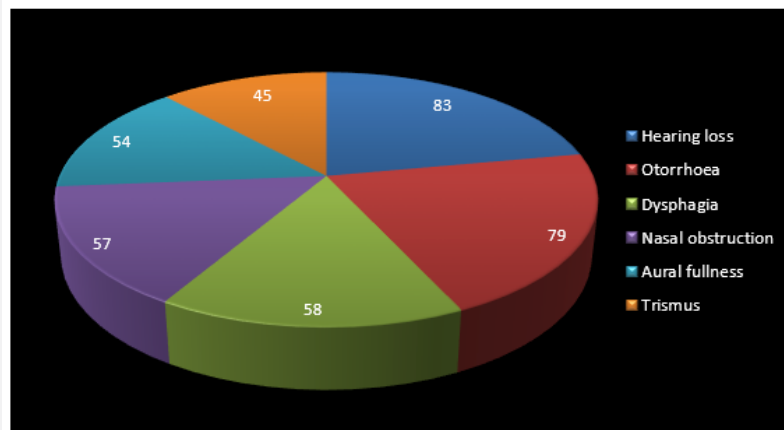


Figure 4: 3D pie representation showing commonest symptoms accompanying otalgia from several regions of ENT.

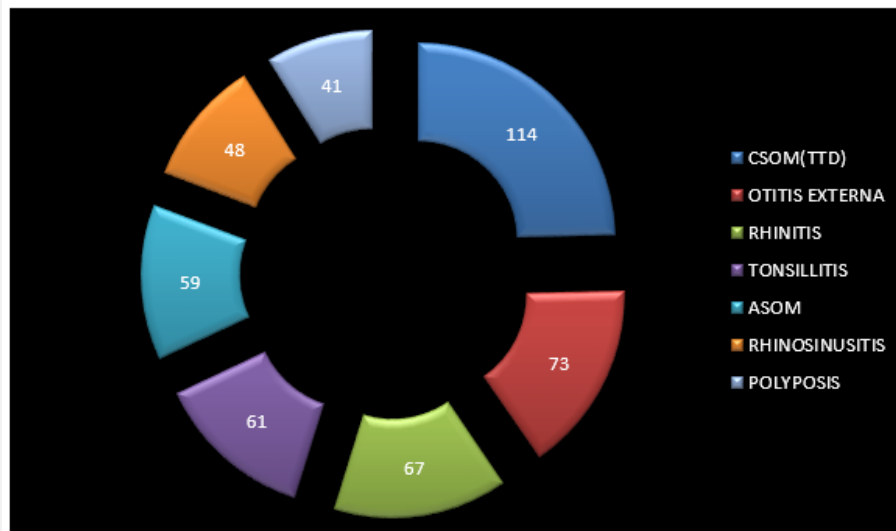


Figure 5: Exploded doughnut depiction showing top seven causes for otalgia with reference to ENT, H & N.

Table 1: Based on causes for otalgia.

Ear (Otogenic)			
Chronic suppurative otitis media [CSOM (TTD)]	114	Ear trauma both traumatic perforation of drum, external injury	21
Acute suppurative otitis media (ASOM)	59	Furunculosis (F)	12
Cerumen/Wax (C/W)	49	Myringitis (M) both Granular & Bullous	7
Otomycosis (O)	28	Ramsay Hunt Syndrome/ Herpes Zoster Oticus (RHS/HZO)	4 (each)
Chronic suppurative otitis media [CSOM(AAD)]	27	Malignant otitis externa (MOE)	
Eustachian tube catarrh (ETC)	33	Perichondritis (P)	3
Otitis media with effusion/ Secretory otitis media (OME/SOM)	27	Generalised otitis externa/ (GOE/DOE)	18
Nose (Non-Otogenic or Referred)			
Allergic rhinitis(AR)	38	Antrochoanal polyp(ACP)	18
Ethmoidal polyposis (EP)	23	Acute Rhinosinusitis(ARS)	21
Chronic Rhinosinusitis (CRS)	27	Nasal mass/ growth (NM)	3
Acute Rhinitis	29		
Throat(Non-Otogenic or Referred)			
Tonsillitis(A/C & C/C)	61	Oral submucous fibrosis (OSMF)	17
Oro-mandibular syndrome/Temperomandibular joint (OMS/TMJ) arthritis	28	Adenoid hypertrophy(AH)	32
Pharyngitis (P)	19	Quinsy (Q)	5
Oral growth/mass (OM/OG)	12	Eagle's syndrome (ES)	5
Others(Non-Otogenic or Referred)			
Laryngeal tumors/mass (LM/LT) &Thyroid	30	Laryngitis(L)	12
Cervical lymphadenopathy (Koch's) (CL)	19	Vocal nodules/polyps (VN/VP)	15
Parotitis (P)	16	Laryngopharyngeal reflux/ Gastro-oesophageal reflux disease(LPR/GERD)	35
		Trigeminal neuralgia(TN)	

Parotid abscess (PA)	5(each)	Para pharyngeal mass/ abscess (PPM/PPA)	4 (each)
Parotid calculi (PC)		Retropharyngeal mass/abscess(RPM/RPA)	
Parotid tumour (PT)		Submandibular lithiasis	
Submandibular adenitis(S.Ad)		Submandibular abscess	
Glossopharyngeal neuralgia(GN)		Submandibular tumor(ST)	
Nasopharyngeal carcinoma (NPC)	3(each)	Ludwig's angina(LA)	

Table 2: Symptoms accompanying otalgia based on otologic presentation in Ear pathology.

Otologic Symptoms	C (49)	O (28)	F (12)	DOE (18)	MOE (3)	ASOM (59)	P (3)	CSOM(TTD) (114)	CSOM(AAD) (27)	M (7)	ETC (33)	OME (27)	RHS (4)	ET (21)
Otalgia	P29	P18	P6	P9	P1	P32	P1	A28	A3	A1	A3	A3	P2	P8+4
Aural Fullness	A6	A4	A2							S2	P21	P15		S4
Hearing Loss	S11		S3	S5	A1		S1	S32	P13		S7	S7	S1	A2+1
Otorrhea		S6		A2	S1	A6	A1	P50	S8	P4			A1	
Tinnitus						A+3					A+2	A+3		
Giddiness								A+4	A+3					
Itching	A+3		A+1	A+2										
Fever						S18								
Ear Bleed														S+2

Of 405 pts with ear pathology, otologic symptom presentation based as PRIMARY (PS), SECONDARY (SS) & ASSOCIATED (AS) is depicted in the tabular presentation above.

Otalgia	PS(110),AS (38)	Aural Fullness	PS(36),SS(6)AS(12)
Hearing loss	PS(13),SS(66)AS (4)	Otorrhoea-	PS(54),SS(15)AS(10)
Tinnitus	AS (8)	Giddiness-	AS (7)
Itching in the ears	AS (6)	Fever-	SS (18)
Bleeding from ear	SS (2)		

Table 3: Symptoms accompanying otalgia based on non-otologic presentation in Nose pathology.

Non-Otologic Symptoms	NM (7)	Ac. R (29)	AR (38)	ARS (21)	CRS (27)	EP (-23)	ACP (18)
Rhinorrhoea		S6	P13				S2
Nasal obstruction	S2	P10	S10	P9	P9	P9	P8
Headache		A4	A7		S7	A5	
Hemifacial pain				A4			A2
Anosmia						S3	A+2
Epistaxis	P4				A+2		
Fever		A+ 3		S3			
Epiphora					A3	A+2	
OTALGIA	A1	A++6	A+ 8	A+5	A++6	S+4	S+4

Of 163 patients with nose pathology, non-otologic symptom presentation based as (PS), (SS) & (AS) is depicted in the table above.

Rhinorrhoea	PS(13), SS (8)	Nasal obstruction	PS (45), SS (12)
Headache	SS(7), AS (16)	Hemifacial pain-	AS (6)
Anosmia	SS (3), AS (2)	Epistaxis-	PS (4), AS (2)
Fever	SS (3), AS (3)	Epiphora-	AS (5)
Otalgia	SS (8), AS(26)		

Table 4: Symptoms accompanying otalgia based on non-otologic presentation in Throat pathology.

Non-Otologic Symptoms	A/C T(23)	C/C T (38)	P (19)	Q (5)	OM/OG (12)	OSMF (17)	OMS (28)	AH (32)	ES (5)
Throat pain	P9	P9	P7	P2					
Throat irrit.		A++3				A2		S5	
Postnasaldrip		A+++2	S3					A++2	
Voice change	A+ 2	A+ 3		A++1	A++1				
Reflux symp.			S+4						
FB sensation		S+ 2							
Halitosis	A++2				S4			A+3	
Headache							S6		A+1
Trismus					A2	S4	P11		S1
Dysphagia	S5	S8			P4	P7			P2
Odynophagia			A+1				A+2		
Dyspnoea		S++2							
Fever	S+2			S1					
Nasal obst.								P11	
OTALGIA	A3	A9	A4	A1	A1	A++4	A9	A11	A1

Of 179 pts with throat pathology, non-otologic symptom presentation based as (PS), (SS) & (AS) is depicted in the table above.

Throat Pain	PS (27)	Throat Irritation-	SS (5), AS (5)
Postnasal drip	SS (3), AS (4)	Voice change-	AS (7)
Reflux symptoms	SS (4)	FB sensation-	SS (2)
Halitosis	SS (4), AS (5)	Headache-	SS(6), AS (1)
Trismus	PS(11),SS(5),AS(2)	Dysphagia-	PS(13), SS (13)
Odynophagia	AS (3)	Dyspnoea-	SS (2)
Fever	SS(3)	Nasal obstruction-	PS (11)
Otalgia	AS (43)		

Table 4A & 4B: Symptoms accompanying otalgia based on non-otologic presentation in other pathology with relation to Head and Neck.

Part A:

Non-otologic symptoms	GN (3)	TN (4)	NPC (3)	PPM/PPA (4)	RPM/RPA (4)	S.Ad (5)	SL (4)	SA (4)	ST (4)
Headache	S1	P2	S1						
Trismus		S1		S1	S1	P2	P2	P2	P2
Dysphagia			P1	P2	P2		S1		S1
Odynophagia	P1					S2		S1	
OTALGIA	A1	A1	A1	A1	A1	A1	A1	A1	A1

Of 181 pts with pathology in Head and Neck region presenting with non-otologic symptom based as (PS), (SS) & (AS) symptomatology is depicted in the table above (Part 1) and (Part 2) below.

Headache	(PS)+ (AS) (2 each)	Trismus-	PS (8), SS(3)
Dysphagia	PS (5), SS(2)	Odynophagia-	PS(1), SS(3)
Otalgia	AS(9)		

Part B:

Non-Otologic Symptoms	PA (5)	P (16)	PC (5)	PT (5)	LA (4)	CL (19)	LPR/ (35)	LM/LT/T (30)	L (12)	VCN (15)
Throat irrit.							S6			
Voice change						S+ 3		S4		

Reflux symp.							P14			
FB sensation							S+4		S3	
Headache							A8			
Trismus	P2	P8	P2	P2	P1			S+ 5		P7
Dysphagia		A+2	A1	A1		P7		P12	P5	S+4
Odynophagia	S2	A3								S1
Dyspnoea					A1			A3		
Fever						S4			A2	
OTALGIA	A1	S3	S2	S2	A+2	A5	A+3	A+6	A2	A3

Throat irritation	SS (6)	Voice change	SS(7)
Reflux symptoms	PS(14)	FB sensation-	SS (7)
Headache	AS(8)	Trismus	PS(22), SS(5)
Dysphagia	PS(24),SS(4),AS (4)	Odynophagia	(SS)+(AS) (3 each)
Dyspnoea	AS (4)	Fever	SS (4), AS(2)
Otalgia	SS (7), AS(22)		

Table 5: Each part of the ear is affected by several sensory nerves as mentioned in table (6,7).

Auricle: CN (V, VII, X)(C2, C3)	EAM: CN(V,VII,X)
TM: CN(VII, IX,X)	ME: CN(V, VII, IX)

Cranial nerves V, VII, IX, X, C2, and C3 also innervate organs outside ear, leading to abundant probable causes of referred ear pain. Trigeminal nerve- CN V has 3 divisions: ophthalmic (V1), maxillary (V2) & mandibular (V3) branches. It provides sensory innervation to face, sinuses, palate & teeth. Its auriculotemporal branch innervates temporomandibular joint (TMJ). This branch is most commonly implicated in temporomandibular joint disease. Dental and TMJ pathology are common secondary causes of otalgia [8,9]. Facial nerve-CN VII innervates the anterior 2/3 of tongue, sublingual & submandibular salivary glands. It also innervates muscles of facial expression. Glossopharyngeal nerve-CN IX innervates posterior 1/3 of tongue, carotid body & oropharynx. Vagus nerve- CN X innervates sinuses, thyroid gland, pharynx & larynx. Its superior laryngeal branch innervates vocal cords. It also innervates distant organs -heart, lungs & parts of GIT. C2 & C3, branches of cervical plexus innervate back of head, sternocleidomastoid & cervical Para spinal muscles [10].

Otalgia classifies into primary V/S secondary causes. The differential diagnosis is widespread and obtains more detailed coverage. Thus, inclusive and orderly approach to otalgia is critical. Primary otalgia is sub classified into infectious, mechanical, neoplastic & inflammatory causes. Secondary otalgia is classified based on organ systems. More proximal causes of H & N include dental and temporomandibular joint pathology. Distant aetiology include cardiac, gastrointestinal, and lung pathology [11]. At a primary care set-up, ear complaints are relatively common complaint. Primary causes tend to be more common by default. Men incline more towards primary cause, while women towards

secondary cause. Moreover, pediatric cases of otalgia are primary, with ASOM being the most common [12].

Primary otalgia occurs mainly as a result of midline infections, mainly URI. Simple upper respiratory infection can hamper the function of Eustachian tube, hence causing various middle ear infections. Secondary or referred otalgia occurs as a result of complex cranial nerve network that innervates ear [13]. These nerves have a shared connection between ear and organs outside of ear. One theoretical mechanism is the convergence-projection theory, which states that these nerves converge onto a shared neural pathway. Given the extent of different organs that share innervation pathways with ear, secondary otalgia can arise from many different organs [14].

Comprehensive history and physical examination are vital to evaluate otalgia. The surgeon must consider both primary and secondary causes. History should include the following: Red flags: dysphagia, odynophagia, dysphonia, haemoptysis, and loss of vision or black spots, unintended weight loss. Risk factors for malignancy: h/o smoking, h/o alcohol use (approx. 3.5 or more drinks/day), immunosuppressed state, i.e DM [15,16]. Key features on history: Shorter time-frames means benign causes while longer suggest a secondary cause. Ear pain > 4 weeks is apprehensive for malignancy with presence of risk factors and normal otoscopy. Aural fullness rather than ear pain may be more associated with cholesteatoma. Sharp, lancinating pain is more indicative of neuralgia or neuropathy. Malignancy tends to cause U/L symptoms. Ear pain exacerbated by swallowing is S/O glossopharyngeal neuralgia [17,18].

Following associated symptoms indicates following referred origins: Sinus congestion - chronic rhinosinusitis, Toothaches - dental pathology, Hoarseness - vocal cord condition, Heartburn - gastroesophageal reflux, Chest pain - coronary artery disease,

Shortness of breath- lung disease, Upper back pain - cervical disc disease or myofascial pain , Headache, diplopia, malaise, jaw claudication, diplopia - temporal arteritis. It is also possible for patients to experience otalgia during the early postoperative phase of tonsillectomy [19,20].

Physical examination include: Ear: to identify signs of infection or primary aetiology. It may also reveal vesicular lesions, as in Ramsay Hunt syndrome if it occurs with facial paralysis. Nose: Nasal examination to identify inflamed nasal mucosa or nasal polyps. Oral cavity: to identify dental caries, loose fillings, aphthous ulcers, abnormal growths or abscess. Intra-oral palpation may also detect an elongated styloid process. Temporomandibular joint: to identify temporalis, lateral/medial pterygoid or masseter muscle tenderness. It may also reveal trigger points of OMS [21,22].

Head: to recognise pathology in salivary glands. It may reveal salivary gland tumors, duct involvement and presence of stones. Tenderness along temporal artery may reveal temporal arteritis. Neck: to identify lymphadenopathy (acute lymphadenitis or secondary metastasis) and thyroid gland pathology [23,24]. Cervical spine: to identify pathology in the musculoskeletal system. It may also reveal myofascial pain or cervical degenerative diseases. Cranial nerve examination to identify neuropathy. Examination of cardiovascular system, Respiratory system, abdomen and cervical spine to identify referred pain from distant organ systems from ear [25,26].

Total 928pts were considered for the study. pts presented with various ENT pathology comprising of total 49 conditions were 15 from Ear, 7 from Nose, 8 from Throat & while rest 19 were conditions of Head & Neck region. They presented with otalgia as one of the symptoms during their presentation over a study period of 1 year and were followed over for 6-8 months until till date. Otolgia can be restrictive/ related to ear per se/ otologic/ otogenic or referred/ around & along ear/ non-otologic/ non-otogenic cause.

Pts with Ear pathology are 405pts (43.64%), of which 105 are children and rest 300pts are adults. Similarly for Nose pathology, out of 163pts (17.56%), 32 are children and rest 131pts are adults. Whilepts with Throat pathology are 179pts (19.28%), of which 62 are children and rest 117 are adults. Lastly,pts with various Head and Neck pathology are 181pts (19.50%), of which 18 are children and rest 163 are adults as per in this study. In this study, Children comprise totally of 217pts (23.38%) [105 ear v/s 112 restpts] while Adults comprise of 711pts (76.61%) [300 ear v/s 411 restpts]. Children occupy mostly the ear group with otogenic cause for otalgia while adults mainly belong to other groups with referred cause for otalgia as seen in the figures here.

In this study, Adult population is (77%) while Children is (23%). Among them, Males are (67%) and Females are (33%). Hence, Adult: Children ratio is nearly 3:1 and male:Female ratio is nearly 2:1. As per this study, in children most common causes for otalgia- Adenoids (32pts), CSOM (31pts), Chronic tonsillitis &

ASOM (with 20pts each). Almost same amount of pts (i.e nearly 50pts) belong to 2 groups of Ear & Throat. In adults, most common causes for otalgia-CSOM (110pts), OE (55pts), Rhinitis (51pts). Here, in adults ear cases comprised nearly 165pts compared to other group of involvement. Otologic causes for otalgia with reference to parts of ear are -External ear (EE)-124(31%), Middle ear (ME) - 281(69%). Ratio to ME:EE is nearly 2:1. EE causes in children is 39pts & adults is 85pts while ME causes in children is 66pts & adults is 215pts as in this study.

In this study, as per basis for otalgia, Ear comprises -405pts (44%) while rest of the causes belonged to Nose/Throat/Head & Neck pathology of 523pts (56%). This information infers that 56%pts belong to referred cause of otalgia while 44%pts belong to causes related to ear. Among a list of around 27 symptoms who presented to OPD with various causes for otalgia are mentioned above. Of which 8 each belonged to Ear & Nose, 11 with 3 overlaps from Nose belonged to Throat & lastly 4 with all of them overlapping Nose & Throat belonged to Head & Neck region. In this study, 6 most common symptoms accompanying otalgia are Hearing loss: 83pts, Otorrhoea: 79pts, Dysphagia: 58pts, Nasal obstruction: 57pts, Aural fullness: 54pts & Trismus: 45pts.

Most of the cases have U/L involvement with no difference to right & left side connection with reference to causes for otalgia in this study. 148pts i.e. (16%) with Ear pathology among total 928pts with presented with otalgia as one of the symptom during disease presentation. While combination of Nose/Throat/ Head & Neck pathology together comprise 86pts i.e. (9%) presented with referred otalgia as per symptom presentation with respect to individual pathology and region involvement.

Of 16 causes for otalgia in ear among 405pts, 3 most common causes are CSOM (TTD) - 114pts, ASOM- 59pts & Cerumen- 49pts. The inference gathered is that CSOM and ASOM are 2 middle ear causes while Cerumen is the only one external ear cause. There is no cause for otalgia with relation to inner ear. Total 148pts (37%) have otalgia as one of their presentation among 405pts of which 110pts have otalgia as Primary symptom and rest 38pts as associated symptom. Among these 222pts, 89pts i.e. (40%) have otalgia as Primary and Associated symptom. Other 3 symptomatology along with otalgia with reference to ear are Hearing loss- 83pts, Otorrhoea-79pts & Aural fullness- 54pts.

Of 7 causes met in nose among 163pts, 3 most common causes are Rhinitis-67pts, Rhinosinusitis- 48pts & Nasal polyps- 41pts. In these 163pts, Allergic rhinitis- 38pts, Acute rhinitis- 29pts & Chronic rhinosinusitis- 27pts. The interpretation congregated is that all the causes are linked with allergy as etiology associated with compromised mucociliary nasal clearance mechanism related to Eustachian tube functional system. Total 34pts (21%) have otalgia as one of their presentation among 163pts, of which 8pts have otalgia as Secondary symptom and rest 26pts as associated symptom. Among 34pts (22%) from 156pts & 20pts (21%) from 94pts have otalgia as Secondary and Associated symptom. Other

3 symptomatology along with otalgia with reference to nose are Nasal obstruction-57pts, Headache- 23pts & Rhinorrhoea- 21pts.

Of 9 causes chance upon in throat among 179pts, 3 most common causes are Tonsillitis-61pts (A/C:23 +C/C: 38), Adenoid hypertrophy- 32pts, OMS- 28pts. The conclusion assembled is otalgia due to referred pain from various causes in throat. Total 43pts (24%) have otalgia as Associated symptom, one of their presentation among 179pts. 32pts (26%) of 121pts have otalgia as Associated symptom. Other 3 symptomatology along with otalgia with reference to throat are Throat pain- 27pts, Dysphagia-26pts & Truisms- 18pts.

Of 19 causes come across in Head & Neck region among 181pts, 3 most common causes are LPR- 35pts, Tumors of larynx-30pts, Koch's cervical lymphadenopathy- 19pts. The implication collected is otalgia due to referred pain from various causes in Head & Neck region. Total 38pts (21%) have otalgia as Secondary & Associated symptom, one of their presentation among 181pts. 14pts (17%) of 84pts have otalgia as associated symptom. Other 3 symptomatology along with otalgia with reference to Head & Neck region are Dysphagia- 32pts, Trismus- 27pts & Reflux symptoms-14pts.

Conclusion

Here is a list of inferences drawn from the present study:

- a. In terms of group, EAR tops the list of all other causes of otalgia.
- b. As per sample size- Children preponderates in otologic cause, while Adults predominates in non-otologic causes for otalgia.
- c. As per cause for otalgia- Children E=T, while in Adults dominates in ear.
- d. A: C ratio= 3:1 and M: F ratio = 2:1.
- e. Based on otogenic cause for otalgia- ME:EE= 2:1 in both adults and children.
- f. $E < N/T/H\&N$ that means, 56%pts belong to referred cause of otalgia while 44%pts belong to causes related to ear.
- g. According to symptom presentation overall along with otalgia- $E > T > N$.
- h. $U/L > B/L$ with no difference to side involvement.
- i. Overall otalgia presentation in 928pts- 148 (E) > 86 (N/T/H&N) i.e. 16% > 9%.

The objective of the study is to bring to light the wrong notion that only ear causes can lead to otalgia. There are probable chances of multiple systems to be involved with a simple symptom like

otalgia. Remembering red flags and risk factors concerned with otalgia play a very important role in arriving at a diagnosis. From head to toe, all the causes have to be ticked off from the list of causes when otalgia is been presented as a symptom. This study is one of a kind which has given emphasis with all the causes encountered in ENT OPD who presented with otalgia as their symptomatology. Hence, any symptom as a matter of fact must not be neglected and ignored, be it as in this case of otalgia.

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