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Original Research Article

Clinical Study on Etiopathogenesis and Management of Headache in ENT

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Abstract:

A study was conducted in the Department of Otorhinolaryngology Gauhati Medical College, Guwahati from 1st August 2021 to 31st July 2022. The aim of our study was, to study the clinical evaluation of headache, to find out the frequency of sinus disease causing headache, to find the common age and gender distribution of headache, to categorize different types of headache cases coming to an ENT specialist, to find out the triggering and relieving factors of headache. Patients suspected of Tension type headache were consulted with Psychiatrist and opinion obtained. Patients suspected of refractive errors were consulted with Ophthalmologist and opinion obtained. Routine blood investigations like Hb%, TC, DC, ESR, BT, CT, urine for albumin, sugar and microscopy. According to clinical diagnosis, radiological investigations i.e., X-ray Para nasal sinuses (waters view), CT Paranasal sinuses was advised. DNE was advised to patients with nasal symptoms. Acute infections were first treated with medication for 3 weeks. Patients with positive DNE findings and CT PNS findings were advised FESS. Out of 100 patients, 43 Patients had tension type headache (TTH), 16 patients had migraine, 31 patients had headache due to rhinogenic causes. Results of our study were compared with the published data available in the literature.

Keywords: headache, Migraine, FESS.

Introduction

Headache or Cephalgia in medical term is the sensation of pain in any region of the head and is a common complaint that has been around since the dawn of human race. In the early days many believed that headache occurred due to possession by evil spirits or as punishment for offending the gods. Skulls with trephination surgery[1] dates back to the early 13th century wherein neurosurgeons bored holes in skulls so that headache causing demons could escape.

Hippocrates, the famous Greece physician also stumbled upon the mystery of headache. He prescribed herbs to cause vomiting as that seemed to resolve some forms of headache. He also devised another form of treatment that involved bloodletting through small cuts to manage forms of headache, a practice that thrived throughout the Middle Ages. In the 17th century Thomas Wills and Erasmus Darwin theorized that headache occurred due to vasodilation. Various forms of management and treatment burgeoned over time starting from herbs to folk lore remedies until the development of drugs like Ergotamine and Triptans[2]. In present day, modern medicine as well as endoscopic techniques is well established and in combination with modern imaging techniques particularly Computerized Tomography opens up wide diagnostic possibilities and treatment unimagined a few decades ago Patients with headache are often referred to a variety of specialist including primary healthcare physician, neurologist, dentist and even psychiatrist. They present to Otolaryngologist at times because they or their physician believe their headache to be related to underlying sinus pathology. The primary focus of the otolaryngologist is to differentiate the forms of headache presented to them and identify any headaches that might have direct or indirect relation to sinus pathology.

Aims and Objectives:

- To study the clinical evaluation of headache
- To find out the frequency of sinus disease causing headache
- To Find the common age and gender distribution of headache
- To categorize different types of headache cases coming to an ENT specialist
- To find out the triggering and relieving factors of headache

Materials and Methods:

The present study of "Clinical study on Etiopathogenesis and management of headache in ENT" was conducted in the department of Otorhinolaryngology, OPD in Gauhati Medical College from 1st August 2021 to 31st July 2023. Study design was a prospective study. Patients for the study were collected from the Department of Otorhinolaryngology Gauhati Medical College Hospital.

The study included 100 patients with headaches and the cases were diagnosed based upon the clinical examination and investigation. Patients presenting with headache for more than 1 month of all age groups and sexes were included in the study. Exclusion Criteria was, 1. Medically unstable, lethargic, unarousable, agitated or uncooperative patients, 2.

When the information obtained from the study is unlikely to change the patient's management such as in the situation of advanced care preferences, chronic disease, or end-of-life. Selected patients were subjected to detailed history with thorough clinical examination. Patients were asked about history of headache, Mode of onset, Duration of complaint, Continuous or intermittent, Progressive or not, Site of pain and radiation, Type of pain, Associated symptoms, Aggravating and relieving factors, Duration of each attack, Frequency of attack, time of onset of attack, Diurnal variation. Treatment taken for the same Patients suspected of migraine features were consulted with neurologist and complete clinical and radiological investigations were done.

Patients suspected of Tension type headache were consulted with Psychiatrist and opinion obtained. Patients suspected of refractive errors were consulted with Ophthalmologist and opinion obtained. Routine blood investigations like Hb%, TC, DC, ESR, BT, CT, urine for albumin, sugar and microscopy done. According to clinical diagnosis, radiological investigations i.e., X-ray Para nasal sinuses (waters view), CT Paranasal sinuses was advised. DNE was advised to patients with nasal symptoms. Acute infections were first treated with medication for 3 weeks. Patients with positive DNE findings and CT PNS findings were advised FESS.

Results and Observations:

Table 1: Age distribution of Headache

Type of Headache	Age Group (in years)						
	5-10	11-20	21-30	31-40	41-50	51-60	>60
Tension Headache	0	3	12	8	10	7	3
Migraine	0	2	6	5	3	0	0
Cluster Headache	0	0	2	0	0	0	0
Sinus Headache	1	5	8	7	5	3	2
Refractive error	0	2	1	0	0	0	0
Others**	0	0	1	2	1	1	0
Percentage	1%	12%	30%	22%	19%	11%	5%

**Other headaches include hypertensive headache, trigeminal neuralgia, temporomandibular joint Arthrosis.
The highest age incidence is present in the age group of 21-30 year (30%), followed by 31-40 years (22%).

Table 2: Gender distribution of headaches

Type of headache	Male	Female
Tension headache	25	18
Migraine	4	12
Cluster Headache	0	2
Sinus Headache	17	14
Refractive error	2	1
Others**	3	2
Percentage	51%	49%

**Other headaches include hypertensive headache, trigeminal neuralgia, temporomandibular joint arthrosis.
The Study showed that in general "tension headaches" are more common in males where as "Migraines" are more common in females.

Table 3: Localization of headache

Localization	No. of cases
Forehead	30
Multiple Sites	56
Parietal	6
Occipital and Neck	8

The site of pain as observed in the patients was maximum in multiple sites followed by pain and discomfort in forehead region.

Table 4: Duration of headache (in months)

Duration in Months	No of Patients
<1 Month	15
1 to <3 Months	13
3 to <6 Months	21
6 to <12 Months	44
12 to <24 Months	12
>=24 Months	5

The study showed that in more than 44 percent of the patients, the headache symptoms persisted for a maximum period (i.e. between 6 to 12 months).

Table 5: Frequency of headache

Frequency	No of patients
<=5	28
6 to 14	42
>=15	8
Continuous	22

The study showed that maximum patients had 6 to 14 episodes of headache per month, which accounted for 42 % of the total cases, while 28 % of the patients had 5 or fewer episodes per month and 22 % of the patients had continuous headache.

Table 6: Duration of a headache episode

Duration of each Episode (In Hours)	No. of Patients
<1	24
1 to 12	49
13 to 24	12
>24	8
Continuous	16

The study showed that the duration of headache lasted between 1 to 12 months in 49 % of the patients, which is the highest in the category, followed by 24% of the patients who experienced brief episodes of headache lasting less than 1 hour.

Table 7: Intensity of pain in headache

Intensity of pain	No. of Patients
Mild	28
Moderate	62
Severe	10

The study showed that more than 62 % of the patients felt moderate intensity of pain followed by 28 % of the patients who felt mild pain, while 10 % of the patients felt severe pain.

Table 8: Triggering factors of Headache

Triggering factors	No of Patients
Stress	27
Runny Nose/congestion	18
Seasons	14
Miscellaneous**	12
Bending Over	9
Head movement	6
Insomnia	5
Menstrual Periods	5
Blood pressure	4

**Miscellaneous includes exposure to bright light, dehydration, loud noise, smoking, caffeine. Of the patients studied, “Stress” was found to be the most prevalent triggering factor for headache which accounted for 27 % of the cases. Runny nose/congestion accounted for 18 % of the cases, followed by seasonal headaches in 14 %. Headaches when bending over were observed in 9 % of the cases.

Table 9: Relieving factors of headache

Relieving factors	No of Patients
Medication	64
Good Sleep	18
Relieved spontaneously	6

Vomiting	5
Cold Compress	5
Not relieved	2

The study showed that medication resolved headache in 64 % of the patients. Good sleep at 18 % of the cases played an equally important role in resolving headache followed by Vomiting at 5 %. It was also observed that in few cases headache symptoms resolved spontaneously on its own.

Table 10: Rhinogenic cause of headache.

Rhinogenic Cause	No. of Cases
Deviated Nasal Septum	9
Allergic Rhinitis	7
Nasal Polyp	6
Chronic Sinusitis	5
Concha bullosa	4

Of the 100 patients in the study, 31 of them had headaches that can be attributed to rhinogenic causes after undergoing Diagnostic Nasal Endoscopy (DNE). The table below gives a brief summary

Table 11: Surgical outcome

Type of surgery	No. of patients (n=31)	Outcome	
		Relieved	Relieved
SMR	15	13	2
FESS	13	10	3
SMR+FESS	3	3	0
P VALUE(Two-Tailed)	0.043		

Patients who underwent surgery due to Rhinogenic Cause: Of the total number of 31 patients admitted for surgery, due to rhinogenic causes, 15 patients underwent SMR, 13 patients underwent FESS and 3 patients underwent SMR + FESS.

The patients were followed up after two months. Post operatively out of 31 patients 26 patients was significantly relieved of their headache while 5 of them were not relieved.

Thus, the present study shows that patients undergoing surgery has a significant outcome on headache relief.

Discussion

World Health Organization (WHO), estimates the prevalence of headache at 47 %, with half to three quarters of adults aged between 18-65 years experiencing headache in the year 2020. The Global Burden of Disease, on the other hand estimated the global prevalence of active headache disorders at 52 %.

The Study published in April 2022 was comparable to that of the data in GBD 2019, but higher for headache overall. Each day 15.8 % of the world's population had headache with MLR analysis showing a variation of 30 %. The tables below draw an overall summary of the various studies conducted across the world for discussion.

Table 12: Age group highest affected

Studies	Age Group	Total No Cases Taken For Study	No Of Cases Found	Percentage
Dr.Fakruddin Ahmed et al, 2017	21-30	120	47	39.16%
Dr. Ziauddin Ahmad et al, 2018	21-30	100	38	38%
Dr. Dhanyan Harshidan et al, 2021	>51	100	37	37%
Present Study, 2022	21-30	100	30	30%

Our study was conducted in the department of Otorhinolaryngology, OPD, Gauhati Medical College with 100 patients suffering from headache. As seen from the data in Table-11, the highest age groups affected were between 21-30 years. The study draws similarities to clinical studies of Dr. Fakruddin Ahmed et al, 2017, Dr. Ziauddin Ahmad et al, 2018 wherein the highest age group affected were found to be between 21-30 years which concurs with our present study.

Table 13: Gender most affected

Studies	Total No Cases Taken For Study	Male	Female
		Percentage	
Guruprasad Kundapura Gidibidi et al, 2012	284	26.06	73.94
Dr.Fakruddin Ahmed et al, 2017	120	28.33	71.67
Dr. Ziauddin Ahmad et al, 2018	100	53	47
Dr. Dhanyan Harshidan et al, 2021	100	28	72
Present Study, 2022	100	49	51

The gender distribution of our study showed that the prevalence of headache in the female populations are more than male which concurs with the studies of Guruprasad Kundapura Gidibidi et al, 2012 (73.94 %), Dr. Fakruddin Ahmed et al, 2017 (71.67 %) and Dr Dhanyan Harshidan et al, 2021(72%).

Table 14: ENT causes

Studies	Headache with ENT Causes	Percentage
Dr. SB Mahajan et al, 2011	62(n=140)	44.28
Dr.Fakruddin Ahmed et al, 2017	56(n=100)	56
Dr. Dhanyan Harshidan et al, 2021	13(n=100)	13
Present Study	31(n=100)	31

Our study showed that the 31 % of the patients coming to ENT OPD for their headache ailments had underlying ENT causes. In other clinical studies as tabulated above in Table-14, Dr. SB Mahajan et al, 2011 found 44.28% of patients with ENT causes while both Dr.Fakruddin Ahmed et al, 2017 and Soumyadarshan Nayak et al, 2020, found 56 % of the patients with ENT Causes.

Table 15: Different types of headaches presented

Headache Type	Dr.Fakruddin Ahmed et al, 2017(n=120)	Dr. Dhanyan Harshidan et al, 2021(n=100)	Present Study 2022(n=100)
TTH	59	0	43
Migraine	47	0	16
Cluster Headache	8	0	3
Sinusitis	2	13	31
Trigeminal Neuralgia	0	2	2
Ophthalmology related	0	17	3
Temporomandibular joint disorder	0	5	2

Tension Type Headache (TTH) was the most common type of headache type found in our study at 43%, which concurs with the study of Dr. Fakruddin Ahmed et al, 2017 who also reported his highest number of headache cause as TTH at 59%. Sinusitis cases at 31% was found to be the second largest factor for headache ailments, followed by Migraine (16%) then Cluster headache (3%) and Ophthalmology related headache (3%).

Table16: Different rhinogenic variations

Rhinological variations	Rajwant Kaur et al, 2021	Hosalli Kumarswamy Nagarathna et al, 2020	Present Study
DNS	36.61	38.33	29.03
DNS with allergic rhinitis	16.90	1.67	0
Concha bullosa	14.08	3.33	12.90
Nasal Polyps	11.26	10	19.35
Allergic Rhinitis	18.30	3.33	22.58
Chronic Sinusitis	0.00	28.33	16.13

Deviated Nasal Septum (DNS) was found to be the most common anatomic variations of Rhinogenic headache cause at 29.03%. Both the studies of Rajwant Kaur et al, 2021 at 36.61% and Hosalli Kumarswamy Nagarathna et al, 2020 at 38.33 % reported DNS as the most prevalent cause which concurs with our present study. Allergic Rhinitis was the next common anatomic variations found in our study at 22.58% which concurs with the studies of Rajwant Kaur et al, 2021 that also reported at 18.31 % the second most common variations in the study. Out of 100 patients from our study, 69 patients with non rhinogenic cause of headache were given medical management and the rest 31 patients with rhinogenic cause of headache were opted for surgical management.

Table 17: Percentage of people cured or with significant relief after surgical treatment

Studies	Total Relief/Significant Relief
Tousun F, Gerek M on 2000	90
Hosalli Kumarswammy et al, 2020	97.9
Moustafa S. Hammad et al, 2012	80
Present Study	83.8

Our present study found that in 83.8% of the cases a significant or total relief was noted after surgical treatment. Tousun F, Gerek M et al 2000, also drew similar conclusion as per the study conducted in a series of 30 patients, where total relief was achieved in 43% of patient and significant improvement in 47% of patients, after endoscopic sinus surgery. Hosalli Kumarswammy et al, 2020 found total or significant relief in 97.9 % of the cases while Moustafa S. Hammad et al, 2012 re-

ported positive results for 80% of the cases. It can be concluded from the studies above those surgical treatments like FESS are viable for headache ailments attributed to rhinogenic causes.

Conclusion

Headache is nearly a universal human experience. It's a complaint and not a disease. Generally, patients referred to Otorhinolaryngologists may have multifactorial etiology so diagnosis of underlying medical condition causing headache is important. The awareness of clinical signs and symptoms along with detailed clinical history, examination of nose and paranasal sinuses plays a vital role in differentiating rhinogenic from non rhinogenic causes. Radiological assessment and nasal endoscopy of nose and paranasal sinuses provide further overview of the diagnosis process. Most primary causes of headache resolve with medical care while those with rhinogenic causes may require surgical management to alleviate the pain. Follow up for long duration of the patient is helpful in treating headache of various etiologies.

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