

ORIGINAL RESEARCH

Clinical Characteristics Of CH Patients: A Prospective Study

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ABSTRACT

Introduction: Because of incorrect diagnosis, cluster headache (CH), the rarest and most excruciating of all primary headaches, continues to be poorly handled. Correct diagnosis and targeted treatment are required. There aren't many research on CH, and none are from this area.

Materials and Methods: to research the comprehensive clinical profile of CH patients and to contrast them between the sexes. The JLN Medical College and Associated Hospital in Ajmer, Rajasthan, conducted the study (from May 2021 to December 2022). 28 CH patients with diagnoses made in accordance with International classification of Headache disorder III (ICHD III). All patients underwent standard examinations and brain MRIs. The results of all measurements were presented as mean \pm SD. The Chi square test was used to compare categorical variables, while the Student's t test was used to evaluate continuous variables. The significance level for statistical analysis was established at $P = 0.05$ using SPSS for Windows, Version 21.0.

Results: M: F ratio was 13:1. Age at presentation was from 18-65 years (mean - 39 years). Mostly patients suffered from episodic CH. Pain was unilateral in 96.4%, predominantly over frontal region-22 (78.6%). Pain quality was bursting in 22 (78.6%). Among autonomic features, conjunctival injection & lacrimation-25 (89.3%) were most common. Restless was found in 90.5% of patients. Circadian periodicity for attacks was noted in 11 (39.3%).

Conclusion: Results are generally in line with those of other studies, although they differ from Western studies as in our study familial history, chronicity of CH are less common. It is crucial to have a thorough history because incorrect diagnoses are frequently made.

Key words: Autonomic, Cluster Headache, Trigeminal

INTRODUCTION

0.1% of the general population suffers from cluster headaches (CH) [1]. The most prevalent form of trigeminal autonomic cephalalgia, CH is characterised by episodes of acute unilateral headache or facial pain lasting 15–180 minutes. It is also regarded as the most severe primary headache disease [2]. Typically, ipsilateral autonomic symptoms such ptosis, miosis,

conjunctival injection, lacrimation, nasal congestion, rhinorrhea, forehead and facial perspiration, and eyelid edoema coexist with CH attacks. Assaults can occur up to eight times each day, every two days, with a tendency toward nighttime attacks [3]. Additionally, CH has a remarkable diurnal and circannual rhythmicity, with episodes frequently characterised by assaults that last for weeks or months (in-bout periods), followed by periods of total remission (out-of-bout periods) [4].

About 10-15% of CH patients have the chronic variety, in which remission intervals are either nonexistent or endure for no more than three months for at least a year [2, 5]. According to recent neuroimaging research, the CH pathophysiology involves dynamic switching between in- and out-of-bout periods and pain-modulatory circuits in addition to the hypothalamus. The pathophysiology of CH is also significantly influenced by activation of the trigeminovascular system and the subsequent production of vasoactive neuropeptides. However, there is a dearth of information in the literature about CH in Eastern nations. The purpose of this paper was to know the detailed clinical characteristics of CH patients in India.

MATERIAL & METHODS

It is a hospital-based prospective study carried out between May 2021 to December 2022 at the department of neurology, JLN medical college & attached hospital, Ajmer, Rajasthan. Patients with CH, as defined by the second edition of the International Classification of Headache Disorders (ICHD-III), [6] attending a neurology unit, made up the study population. Two consultants thoroughly evaluated the clinical status of each patient. Data was gathered regarding the progression of the disease, the location, laterality, quality, strength, and radiation of the pain, as well as the frequency, duration, periodicity, and duration of clusters of attacks. A family history of headache, history of smoking and drinking, autonomic features, extra features (such as nausea, vomiting, photophobia, phonophobia, and behaviours during attacks), and possible trigger factors were also documented. Patients were divided into episodic or chronic CH categories. All patients underwent routine haematological and biochemical tests in addition to brain imaging (MRI). To rule out underlying cerebral or neck structural abnormalities including tumours, vascular malformations, and cervicocephalic artery aneurysms/dissections that can manifest as cluster headaches, an MRI brain was performed.

The course of treatment was unique. Aside from a small number of urban literate patients, subcutaneous and intranasal sumatriptan was not commonly recommended due to its expense. Corticosteroids and Ergotamine were used as rescue medications. Verapamil was administered for the proper amount of time to individuals who experienced longer spells.

RESULTS

A total of 30 consecutive CH patients were evaluated during the study period. Two patients were excluded as one of the patients also had the features of trigeminal neuralgia, other had features of paroxysmal hemicrania, which didn't fulfill the criteria of ICHD-III.

Out of remaining 28 patients, 26 (92.9%) were males and 2 (7.1%) were females. 92.9% of subjects had episodic CH and 7.1% of subjects had chronic CH. Mean age at presentation was 39.04 ± 13.4 years (range 18-65 years) (males, 39.35 ± 13.4 years vs. females, 35.0 ± 16.9 years). The mean age at onset was 30.71 ± 13.21 years (range 15-58 years) (males 31.12 ± 13.32 years vs. females 25.50 ± 14.80 years, $P = 0.572$) [Table 1]. Time lag before diagnosis was 1 months to 25 years [Table 2]. All our patients had consulted other medical clinics and had been referred from other doctors, and none of them had previously been diagnosed with CH.

Table 1: Demographic profile

Patient Characteristics		Total (n=28)	Male (n=26)	Female (n=2)	P value
Type of cluster head ache	Episodic	26	24	2	1.000
	Chronic	2	2	0	
Age at presentation in years (mean±SD)		39.04 ± 13.4	39.35 ± 13.4	35.0 ± 16.9	0.667
Age at onset in years (mean±SD)		30.71 ± 13.21	31.12 ± 13.32	25.50 ± 14.80	0.572
Family history		0	0	0	0

Table 2: Latency before diagnosis

Time before diagnosis	Total (n=28)	Male (n=26)	Female (n=2)
Less than 1 year	0	0	0
From 1 to 5 years	15(53.5%)	15 (57.6%)	0
From 6 to 10 years	5 (17.8%)	4 (15.3%)	1 (50%)
More than 10 years	8 (28.5%)	7 (26.9%)	1 (50%)

SITES AND LATERALITY OF HEADACHE

Pain was strictly unilateral 27 (96.4%)& bilateral 1 (3.6%) and was predominantly over frontal region-22 (78.6%) followed by orbital-19(67.9%), temporal-18 (64.3%), and parietal-8 (28.6%). Pain quality was bursting in 22 (78.6%), followed by hammering-15 (53.6%), piercing-14 (50%), and throbbing, electric shock in 2 (7.1%) of each. Peak intensity of pain was reached (maximum) within 60 to 180 minutes (mean = 117.86 minutes) [Table 3].

Table 3: Characteristics of pain

Characteristics		Total (n=28)	Male (n=26)	Female (n=2)	P value
Site of pain	Orbital	19 (67.9%)	17 (65.4%)	2 (100%)	1.000
	Frontal	22 (78.6%)	22 (84.6%)	0	0.040
	Temporal	18 (64.3%)	16 (61.5%)	2 (100%)	0.524
	Parietal	8 (28.6%)	8 (30.8%)	0	1.000
Laterality of pain	Unilateral	27 (96.4%)	25(96.2%)	2 (100%)	1.000
	Bilateral	1 (3.6%)	1 (3.8%)	0	
Quality of pain	Bursting	22 (78.6%)	21 (80.8%)	1 (50%)	0.389
	Throbbing	2 (7.1%)	2 (7.7%)	0	1.000
	Piercing	14 (50%)	14 (53.8%)	0	0.481
	Hammering	15 (53.6%)	14 (53.8%)	1 (50%)	1.000
	Electric shock	2 (7.1%)	2 (7.7%)	0	1.000

CRANIAL AUTONOMIC AND ADDITIONAL FEATURES IN PATIENTS WITH CH

Among autonomic features lacrimation&conjunctival injection-25 (89.3%) was most common followed facial sweating -11 (39.3%), nasal congestion-9 (32.1%), and less commonly, Ptosis-4 (14.3%)& eyelid edema- 1 (3.6%). Other associated features during the attacks were Restlessness (90.5%), nausea/vomiting-9 (32.1%), photophobia-11 (39.3%) & phonophobia-12 (42.9%). [Table 4]

Table 4: Associated autonomic features

Features		Total (n=28)	Male (n=26)	Female (n=2)	P value
Autonomic features	Lacrimation	25 (89.3%)	24 (92.3%)	1 (50%)	0.206
	Conjunctival injection	25 (89.3%)	25 (96.2%)	0	0.008
	Nasal congestion	9 (32.1%)	8 (30.8%)	1 (50%)	1.000
	Ptosis	4 (14.3%)	5 (15.4%)	0	1.000
	Facial sweating	11 (39.3%)	10 (38.5%)	1 (50%)	1.000
	Eyelid edema	1 (3.6%)	0	1 (50%)	0.071
Additional features	Nausea	9 (32.1%)	9 (34.6%)	0	1.000
	Photophobia	11 (39.3%)	10 (38.5%)	1 (50%)	1.000
	Phonophobia	12 (42.9%)	11 (42.3%)	1 (50%)	1.000
	Restlessness	25 (90.5%)	24 (93%)	1 (50%)	1.000

PERIODICITY OF CLUSTER HEADACHE

We observed that each attack ranged in duration from less than 1 h in 8 (28.6%), 1-2h in 14 (4=50%) and from 2 to 3 h in 6 (21.4%) of patients. Time to peak headache was less than 3 minutes in 3 (10.7%), 3-5 minutes in 6 (21.4%), 5-10 minutes in 9 (32.1%) and more than 10 minutes in 10 (35.7%) [Table 5].

Table 5: Characteristics of cluster episodes

Characteristics		Total (n=28)	Male (n=26)	Female (n=2)
Average duration of attacks	Less than 1 hour	8 (28.6%)	7 (26.9%)	1 (50%)
	1-2 hour	14 (50%)	14 (53.8%)	0
	2-3 hour	6 (21.4%)	5 (19.2%)	1 (50%)
Time to peak headache	Less than 3 minutes	3 (10.7%)	2 (7.7%)	1 (50%)
	3-5 minutes	6 (21.4%)	5 (19.2%)	1 (50%)
	5-10 minutes	9 (32.1%)	9 (34.6%)	0
	More than 10 minutes	10 (35.7%)	10 (38.5%)	0

OTHER FEATURES

Circadian periodicity for attacks was noted in 11 (39.3%). One (3.6 %) were alcoholics among total subjects [Table 6].

Table 6: Other associated features

Features	Total (n=28)	Male (n=26)	Female (n=2)
Circadian periodicity	11 (39.3%)	9 (34.6%)	2 (100%)
Alcohol	1 (3.6%)	1 (3.8%)	0

DISCUSSION

Despite the fact that headache sufferers make up the majority of patients in outpatient clinics at hospitals, the physicians frequently give them insufficient attention, which results in a wrong diagnosis and the patient's extended suffering. Trigeminal autonomic cephalalgias may not be mistaken for a tension headache or migraine with careful monitoring and extra effort.

In India, there are hardly any studies on CH. When comparing the clinical characteristics of our patients to those of other Asian and Western research, there are many similarities and few differences.

In our study, the ratio of male was higher as compared to female CH cases. This was significantly higher than western studies and almost identical to that found in other Asian studies (Dong Z et al.,[7] 7:1, Lin KH et al.,[8] 6.4:1). Western studies have found a declining trend in the M/F ratio, which may be related to females' adoption of new lifestyles. [9] According to other studies, the majority of our patients developed CH in their third decade of life. [7-9] Although Bharar et al. [9] reported positive family history in 1.9% to 6.7% of CH patients, we didn't find that in any of our patients. However, the delay before a proper diagnosis was made ranged from one month to twenty five years, highlighting the fact that clinicians need to be educated on this condition to stop patient suffering.

Only 67.9% of our patients had the orbital/retroorbital area, which is where most CH literature refers to as the primary location of discomfort. The frontal region (78.6%) of the body was the area with the most pain in our study, which was similarly true for Japanese[10] patients. According to Western studies[11], the jaw, teeth, and maxilla are additional areas of pain.

90% of our patients stated that CH is one of the worst types of headaches, which is a well-known statistic. We found it challenging to define pain using the VAS (visual analogue scale) because the majority of patients were rural residents. However, in contrast to past Indian investigations by Chakravarty[12] and Ravishankar[13] where monotonous quality was predominate, our patients rated their pain as exploding (78.6%) and hammering (53.6%). The patients' ethnic and educational backgrounds may play a role in these variations since pain intensity and quality are subjective experiences. Our patients' experiences with the concomitant autonomic symptoms, which are the hallmark of these headaches, were found to be comparable to those of other Indian [14] and Asian investigations. [7,8]

Imai et al.'s[10] description of their Japanese patients' restless feelings and restless conduct as two distinct entities. In our study, 90.5% of subjects had restlessness, 42.9% of patients had phonophobia, while 32.1% of patients had nausea.

According to findings from functional and morphometric imaging utilising PET scans by May et al. [14], the biological clock in the suprachiasmatic nucleus of the hypothalamus is responsible for the clock-like rhythmicity and periodicity that is the distinguishing hallmark of CH. 39.3% of our patients had circadian periodicity, which is comparable to findings from prior Chinese[7] and Indian[12] studies.

Personality traits and the Cluster Western research (Rozen,[3] Manzoni[15]) have given headache a lot of attention and found a link between CH and smoking in about 70% of their patients, but not as much of a link with alcohol or coffee abuse. 3.6% of our patients had alcohol in their system, and they kept drinking even when they had headaches.

The small sample size and inability of the data to be extended to the wider population are limitations of our study. Bias in memory when recording the past cluster events. The effects of CH on patients' occupations and quality of life were not investigated.

Additional research including a sizable patient population, ideally from headache clinics, could provide greater understanding of this condition.

CONCLUSION

Our study aims to explore in-depth clinical features of CH in patients who are Indian. Regarding many demographic and clinical profiles, the findings of our study are comparable to those of other Western and Asian studies. However, they differ from Western studies in that they found a lower prevalence of family history, chronic CH, and auras prior to attacks. Different genetic, racial, cultural, and lifestyle characteristics between Indian and Western

patients may account for these discrepancies. CH has been wrongly diagnosed for many years. Cluster headache recognition and care could be enhanced by referring providers' increased knowledge of CH.

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