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An Observational Study On Etiopathogenesis Of Ardhavabhedaka (Migraine)

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ABSTARCT

Ardhavabhedaka is one among the *Shirorogas* explained by various *Acharyas* with the cardinal feature of unilateral headache, which when left untreated may lead to complications like *Vinasha* of *Nayana* and *Shravan* i.e., blindness and hearing loss. This disease can be correlated to Migraine headache due to the similarities between the clinical manifestations. It is the second-leading cause of disability worldwide, considerably limits functioning abilities and has both physical and psychological impacts associated with an increased prevalence of depression and panic attacks. *Nidana* is the primary cause of manifestation for every *Vyadhi*, and *Nidana Parivarjana* is thought to be a sort of cure. This illustrates the crucial role of the *Dosha Prakopaka Nidana* in the beginning of sickness. As a result, a particular questionnaire based on *Dosha Prakopaka Nidana* was developed in order to look into specific *Dosha Prakopaka Nidana* and *Samprapti*. As a result of sticking to *Nidana Parivarjana* and thereby practicing *Pathya*, one might reduce the likelihood of experiencing *Vyadhi* by being aware of the *Dosha Prakopaka Nidana*. Though, finally it will give a proper knowledge regarding how the etiological factors of *Ardhavabhedaka* in the present era can be connected to the causative factors of *Ardhavabhedaka*.

KEYWORDS: *Ardhavabhedaka*, Migraine, *Shiroroga Nidana*, *Nidana Parivarjana*

INTRODUCTION

Ayurveda, which is considered as the Science of Life and Longevity. It is one of the world's most restorative sciences, with a rich trove of outputs and data gathered through thousands of years of intrusive investigation. In present revolutionary period, a person's life is frantic and materialistic. The majority of dietary choices, social order, way of life, and environment have changed with the flow of time. The culture of fast food, junk foods, smoking, alcohol intake and drug addiction habits are spreading. Advanced life style and changing food habits affects the activities of individual which leads to many diseases and migraine is one among them. Migraine is one of the chronic illnesses and the second most common cause

of headache, afflicts approximately 15% of women and 6% of men.¹ Migraine is grouped under primary headache, characterized by episodes of moderate-to-severe headache, most often unilateral and generally associated with nausea, vomiting and increases sensitivity to light and sound. The exact cause of migraine headaches is not known, although seems to be a disease that runs in families. Migraine considerably limits functioning abilities and has both physical and psychological impacts. Prevalence and incidence of its attack suggest that there are nearly 3000 migraine attacks every day for each million of population.² Migraine does not shorten the life span, rather in severe cases a state of chronic exhaustion may occur. Very rarely persistent cerebral symptoms with some irreversible vascular changes have occurred. The negative impact of migraine on quality of life, families and even work productivity is significant and often underrated as a serious complication.

In Ayurveda, migraine is referred to as *Ardhavabhedaka*, a type of *Shiroroga* (headache disorder) described in classical texts like the *Susrutha Samhita*. It is considered a severe form of *Shirashoola*, affecting either side of the head and presenting with symptoms such as pain, throbbing, dizziness, and a feeling of emptiness. According to Acharyas, the head is viewed as the "root" of the body, and disturbances in its function can lead to systemic imbalances. *Ardhavabhedaka* is seen as a progressive form of *Vataja Shirashoola*, which requires immediate attention due to its potential complications and its impact on a person's overall well-being.³

Ayurvedic treatment for migraine focuses on both *Shamana* (palliative) and *Shodhana* (cleansing) therapies, addressing not only the symptoms but also the root causes. Central to this approach is the identification and management of *Nidana* (causative factors) and *Samprapti* (pathogenesis), which involve imbalances in the *Doshas* (body energies) due to improper diet, lifestyle, mental stress, and environmental factors. By understanding the specific triggers for each individual, Ayurvedic medicine seeks to prevent the progression of migraine and avoid complications associated with the chronic use of modern medications such as NSAIDs, antidepressants, and steroids. This comprehensive approach highlights the importance of *Nidana Parivarjana* (elimination of the cause) in restoring balance and promoting long-term health.

OBJECTIVES

- To study the comparative description of *Ardhavabhedaka* with reference to Migraine.
- To study the etiopathogenesis of *Ardhavabhedaka* and migraine.
- To prepare the questionnaire for the assessment of etiological factors and signs and symptomatology of *Ardhavabhedaka* (Migraine).

MATERIALS AND METHODS

Study design: observational clinical study

Literary Source: Literary source of *Ardhavabhedaka* from Ayurvedic texts, modern works, internet sources, concerned articles and previous works done were reviewed and documented.

Sample Source: For the present study patients of either gender were selected at random without any bias of social, economic or religious status from the O.P.D and I.P.D of Alva's Ayurveda Medical College and other referrals.

METHGOD OF COLLECTION OF DATA

- 134 Patients suffering from *Ardhavabhedaka* were selected for study.
- A special case proforma with questionnaire was prepared which includes details of causative factors, history taking, physical signs and symptoms as mentioned in our classics and allied science.
- Patients were analyzed and selected as per fulfillment of the diagnostic and inclusion criteria.

DIAGNOSTIC CRITERIA:**Diagnosed based on following criteria (ICHD-3)⁴**

1. At least 5 episodes of headache, in past history fortnightly or at 10 days interval or random occurrence.
2. Headache attacks lasting 4 to 72 hours.
3. Headache has at least two of the following characteristics:
 - Unilateral location
 - Pulsating quality
 - Moderate or severe pain intensity
 - Aggravation by or causing avoidance of routine physical activity (walking or climbing stairs)
4. During headache, at least one of the following:
 - Nausea or vomiting
 - Photophobia or phonophobia

INCLUSION CRITERIA:

- Patients fulfilling the diagnostic criteria
- Patients were selected irrespective of gender.
- Patient of age 16-60 years

EXCLUSION CRITERIA

- All the secondary headaches.
- Subjects having sinusitis, cluster headache.
- Migraine with aura.
- Severe depression and other psychiatric disorders.
- Pregnant and lactating women.

ASSESSMENT CRETERIA:

Assessment was done on etiological factors and signs and symptomatology of *Ardhavabhedaka* (Migraine) with the help of a questionnaires.

Subjective Parameters: Headache, Intensity, Duration, Frequency, Site, Nausea, Vomiting, Photophobia, Phonophobia.

OBSERVATION AND RESULTS

In the present study, 143 patients presenting with *Ardhavabhedaka* were screened. All the patients fulfilled the diagnostic and inclusion criteria. Therefore, study was conducted on 134 patients with specially designed case proforma containing history recording, physical examination, investigation, *Nidana Panchaka* and detailed assessment of specially designed questionnaires for *Nidana* of *Ardhavabhedaka*. It is observed that out of 134 patients, 57.46 % are coming between 16-30 yrs of age. The gender wise distribution showed the majority of the patients were females 68%. Data related to occupation showed a 26% were students, 23% were health professionals. Regarding the diagnostic features 96 % had unilateral headache, 42% had headache duration of 24-48 hrs, 93% had Pulsating/ Throbbing character of pain, 66%

had severe intensity of pain, 68% had nausea, 51% had vomiting, 91% had photophobia, 74% had phonophobia, 70% had worsening of headache on physical activity.

RESULTS

In the present study, *Nidana* and *Samprapti* mentioned in the classics and in the contemporary medicine in relation with the signs and symptoms of *Ardhavabhedaka* was analysed based on observation made on 134 subjects. *Nidana* were systematically divided in to various domains. Under each domain each item is given with 4 Likert scales with categories Daily, Occasionally, Rarely and Never with scoring 1,2,3 and 4 respectively to record the response of the patients.

Statistical Significance:

- If P value >0.05 indicates non-significant.
- If P value ranging from <0.05 to 0.001 indicates significant.
- If P value <0.001 indicates highly significant.

Table No.1: Likert Scale of Frequency

SL. No	Likert scale of frequency	Score	Frequency of Indulgence
1	Daily	1	Daily
2	Occasionally	2	3-4 times a week
3	Rarely	3	3-4 times in a month
4	Never	4	Never

All parameters of the study were taken for analysis in SPSS Version -20. Results are analysed using Pearson Co-relation Coefficient test.

Diagnostic features of *Ardhavabhedaka* with *Aharaja Nidana*

Table No 2 Showing result of Diagnostic features of *Ardhavabhedaka* with *Ruksha Ahara*

Diagnostic Features	Ruksha Ahara	r- value	P-Value	Results
Headache	• Cow pea	0.26	0.002	S
	• Bengal gram	0.182	0.035	S
	• Dry meat	0.168	0.050	S
	• Drum stick	0.214	0.013	S
Intensity	• Cow pea	0.295	0.001	S
	• Masoor dal	0.259	0.002	S
	• Drum stick	0.184	0.033	S
Nausea	• Bengal gram	0.182	0.035	S
	• Horse gram	0.223	0.01	S
	• Tea	0.187	0.031	S
Vomiting	• Drum stick	0.194	0.024	S
Photophobia	• Dry meat	0.257	0.003	S

Table No.3: Showing result of Diagnostic features of *Ardhavabhedaka* with *Guru Ahara*

Diagnostic Features	Guru Ahara	r- value	P-Value	Results
Headache	• Bakery products	0.215	0.013	S
Intensity	• Cucumber	0.196	0.023	S
	• Coconut & its products	0.282	0.001	S
		0.216	0.012	S
	• Dry fruits			
Duration	• Potato	0.201	0.02	S
	• Amaranth leaves	0.165	0.046	S
Nausea	• Fenugreek leaves	0.196	0.023	S
Vomiting	• Milk	0.194	0.025	S
	• Coconut & its products	0.217	0.012	S
		0.177	0.041	S
	• Fish			
Phonophobia	• Blackgram	0.264	0.002	S
	• Potato	0.177	0.041	S
	• Dry fruits	0.257	0.003	S

Table No.4: Showing result of Diagnostic features of *Ardhavabhedaka* with *Amla Raasa Dravya*

Diagnostic Features	Amla Rasa Dravya	r- value	P-Value	Results
Headache	• Orange	0.164	0.049	S
Intensity	• Lemon	0.167	0.054	S
	• Tomato	0.18	0.037	S
	• Grapes	0.19	0.028	S
	• Energy drinks	0.217	0.012	S
Duration	• Orange	0.188	0.030	S
Frequency	• Tomato	0.1	0.029	S
Vomiting	• Energy drinks	0.185	0.032	S
Phonophobia	• Punarpuli	0.209	0.015	S
	• Grapes	0.223	0.01	S

Table No.5: Showing result of Diagnostic features of *Ardhavabhedaka* with *Haritha Varga*

Diagnostic Features	Harita Varga	r- value	P-Value	Results
Headache	• Garlic	0.183	0.035	S
	• Green Chilly	0.104	0.038	S
Intensity	• Green chilly	0.027	0.016	S
Duration	• Uncooked onion	0.184	0.033	S
	• Carrot	0.266	0.002	S
Frequency	• Uncooked onion	0.023	0.003	S
Vomiting	• Green chilly	0.001	0.048	S
Photophobia	• Uncooked onion	0.187	0.031	S

Table No.6: Showing result of Diagnostic features of *Ardhavabhedaka* with *Ahara Krama*

Ahara Krama	Diagnostic Feature	r- value	P-Value	Results
Adhyashana	• Duration	0.098	0.02	S
Anashana	• Frequency	0.222	0.001	S
	• Phonophobia	0.212	0.014	S
Ajirna	• Nausea	0.284	0.001	S
Atisheetambu	• Headache	0.057	0.050	S
	• Duration	0.163	0.049	S
Madhya sevana	• Vomiting	0.174	0.044	S

Table No.7: Showing result of Diagnostic features of *Ardhavabhedaka* with *Viharaja Nidana*

Nidana	Diagnostic Feature	r- value	P-Value	Results
Pragvata	• Intensity	0.124	0.043	S
Avashyaya	• Intensity	0.178	0.043	S
Vyavaya	• Headache	0.111	0.233	S
Shiro Abhyanga (Dweshi)	• Headache	-0.175	0.043	S (negative corelation)
	• Frequency	-0.086	0.023	
Ratri Jagarana	• Intensity	0.028	0.033	S
	• Phonophobia	0.013	0.081	S
Atiswapna	• Frequency	0.125	0.015	S
Vyayama	• Frequency	0.168	0.05	S
Ayasa	• Duration	0.208	0.016	S
Rajasevana	• Frequency	0.014	0.006	S
Smoking	• Frequency	0.242	0.005	S
Uchhairbashya	• Frequency	0.141	0.003	S
	• Phonophobia	0.191	0.027	S
Atapa sevana	• Intensity	0.062	0.043	S
Meghagama	• Intensity	0.23	0.007	S
Ambukreeda	• Headache	0.055	0.031	S
	• Intensity	0.156	0.031	S
Rutu Viparyaya	• Intensity	0.164	0.048	S
e-Screen	• Intensity	0.156	0.021	S
	• Headache	0.154	0.045	S
	• Photophobia	0.131	0.031	S
Loud sounds	• Headache	0.156	0.033	S
	• Nausea	0.083	0.014	S
	• Phonophobia	0.19	0.028	S

Table No.8: Showing result of Diagnostic features of *Ardhavabhedaka* with *Manasika Nidana*

Nidana	Diagnostic Feature	r- value	P-Value	Results
Manasantapa	• Headache	0.213	0.013	S
	• Duration	0.174	0.021	S
Rodhana	• Headache	0.191	0.005	S

Table No.9: Showing result of Diagnostic features of *Ardhavabhedaka* with *Vegadharana*

Nidana	Diagnostic Feature	r- value	P-Value	Results
Purisha	• Headache		0.018	S
Vegadharana	• Frequency		0.037	S

Table No.10: Showing result of Diagnostic features of *Ardhavabhedaka* with *Gandha Asatmya*

Gandha	Diagnostic Feature	r- value	P-Value	Results
Perfumes	• Duration	0.28	0.001	S
	• Frequency	0.043	0.02	S
Deodorant	• Duration	0.058	0.05	S
Shampoo	• Headache	0.019	0.028	S
Jasmin	• Headache	0.047	0.003	S
	• Intensity	0.089	0.007	S
	• Nausea	0.053	0.041	S
Champak	• Headache	0.215	0.013	S
	• Frequency	0.015	0.004	S
Sugandha raja	• Headache	0.025	0.035	S
	• Duration	0.152	0.011	S
	• Frequency	0.174	0.045	S
Paint	• Intensity	0.089	0.007	S
automobiles	• Headache	0.035	0.02	S
	• Frequency	0.046	0.001	S
	• Phonophobia	0.19	0.028	S
Body odor	• Intensity	0.081	0.031	S
Burning plastics	• Headache	0.155	0.044	S
	• Intensity	0.065	0.007	S
	• Nausea	0.057	0.006	S
Grilled fish	• Headache	0.196	0.023	S
	• Intensity	0.051	0.008	S
	• Duration	0.231	0.007	S
Incense	• Frequency	0.216	0.012	S
	• Nausea	0.154	0.045	S

DISCUSSION

From this study it is observed that *Aharaja Nidana*, *Viharaja Nidana*, *Manasika Nidana* and other factors which are mentioned in classics and contemporary science influence the manifestation of *Ardhavabhedaka*.

DISCUSSION ON AHARAJA NIDANA

Ruksha Ahara: *Ruksha Dravya* are predominant of *Vayu* and *Agni Mahabhuta* and possesses *Lagu*, *Ruksha*, *Chala*, *Khara*, *Tikshna*, etc *Guna*, *Sheeta Virya* and *Katu*, *Tikta*, *Kashaya Rasa*. Excessive consumption can increase *Vata Dosha* and mitigates *Kapha Dosha* in the body. Among *Ruksha Ahara Raja Masha*, *Chanaka*, *Kulatta*, *Shigru*, *Shushka Mamsa* and tea plays significant role in the pathogenesis of *Ardhavabedhaka*.

For instance, regular consumption of *Chanaka* (Bengal gram) which is rich in lectins, causes irritation in the gut mucosa and produces inflammation locally, also involved in vasodilatation effect through nitric oxide, prostacyclin, hyperpolarizing factors.⁵ The vasodilatory effect is a prime factor in activating pain sensing neurons. This phenomenon can cause pulsatile or throbbing type of pain in migraine individuals.

Guru Ahara: *Guru Ahara* is predominant in *Prithvi* and *Jala Mahabhuta*. The *Guru Ahara* is considered as heavy to digest and causes heaviness in the body. In general, *Guru Ahara* possess *Shita Virya*, attains *Madhura Vipaka* and increases *Kapha Dosha* and mitigates *Vata Dosha* in the body.⁶ In the current study, *Masha*, *Aluka*, *Methi*, *Marisha*, *Ksheera* and *Ksheera Vikara*, bakery products, coconut and its products found to have association in the causation of migraine.

For instance, *Masha (Black gram)*: *Masha* possess properties like *Guru*, *Snigdha Guna*, *Ushna Virya*, *Madhura Vipaka* and *Kapha-Pitta Kara*. Black gram contains more amount proteins (25-28%) which can increase urates level in blood when consumed frequently. When serum uric acids levels above 7.8mg/dl, there is exponential relation between serum urates and migraine occurrence.⁷ Hyperuricemia increases oxidative stress, dehydration, hearing impairment and small cerebral vessel diseases including migraine.

Amla Rasa Pradhana Dravyas such as *Naranga* (orange), *Draksha* (Grapes), *Vrikshamla* (Kokum), Tomato and energy drinks shown significant results in the triggering of migraine.

For example; Tomato is a member of *Solanaceae* family, contains high amount of monosodium glutamate (MSG) naturally, frequent consumption can increase the glutamate level in the body. Individuals sensitive to MSG, elevated glutamate levels can overstimulate neurons and trigger migraine.⁸

Harita Varga: *Harita Varga* refers to food items that which can be consumed in raw form like *Palandu* (uncooked onion), *Lashuna* (garlic), *Katuveera* (green chilly), *Gajar*(carrot) have shown significant association with the migraine manifestation. These substances contain various amino acids such as Aspartate, glutamate, arginine, histidine, tyrosine, methionine etc which plays a major role in the causation of migraine headache by activating trigeminovascular (TGV) system. Regular consumption sensitizes the TGV system.

Ahara Krama: Due to *Anashana* (*Upavasa*, *Alpabhojana*). *Adhyashana* (*Sa Ajirna Bhojana*/ eating before previous meal is digested), the *Vata* get aggravated and either alone or along with *Kapha Dosha*. According

Acharya Bhavaprakasha and Madhavakara, these different practices against *Ashta Ahara Vidhi Visheshayatana* leading to manifestation of *Ardhavabhedaka*.

DISCUSSION ON VIHARAJA NIDANA

In the present study, excessive indulgence in Pragavata (exposure to eastern winds), Meghagama (exposure to cloudy atmosphere), Jalakreeda (water sports), Avashyaya (mist/fog), Atapa Sevana (sunlight), Vyavaya (sexual activity), Ratrijagarana (awakening/late night sleep), Ati-Swapna (excessive sleep), Rajasevana (Exposure to dust), Uchhairbashya (Speaking loudly), Vyayama (irregular/ high intensity exercises) Ayasa (Exertion) and Rutu Viparyaya (sudden Change in the climate), prolonged usage of E-Screen, loud noises all these unwholesome regimens (Vihara) are involved in the pathogenesis of migraine. To round off these factors, sudden increase in the oxygen demand, changes in the barometric pressure, increased heart rate, blood pressure, dehydration, sleep deprivation, increased oxidative stress, inflammation or irritation in the upper respiratory tract etc results in alteration in the levels of neurotransmitters (serotonine, brain lactate levels, Calcitonin Gene Related Peptide etc) and affects the vascular stability leads to manifestation migraine headache.

DISCUSSION ON MANASIKA NIDANA

Manasika Nidana like *Mana Santapa* (*Udvega, Shoka, Krodha, Santapa etc*), *Rodhana* (Crying) are due to imbalance in the *Mano Dosha* like *Rajo* and *Tama*. But any disease including mental disorder will, also have involvement of *Sharirika Dosha* (*Vata* and *Pitta Dosha*. *Mana Santapa* refers to emotional stress i.e. psychological strain uneasiness and causes the brain to develop "maladaptive coping mechanisms" that can lead to chronic migraines.⁹

DISCUSSION ON GANDHA ASATMYA

Under classification of *Hetu* (*Trivida Hetu*), *Asatmyendriyarthasamyoga* (*Ayoga, Atiyoga, Mitya Yoga*) i.e., improper utilization of sensory organs is involved in the manifestation of diseases. Smell is directly linked to emotional system; one can perceive smells together with emotions. Certain smells associated with a negative memory can trigger a reaction or migraine headache. Up to 95% of migraine patients have a sensitivity to smells called osmo-phobia, which can trigger or worsen migraines.¹⁰ Certain chemicals like Endocrine disrupting chemicals (EDCs), Volatile Organic compounds, (VOCs), strong odour or unpleasant odour from various objects including flowers, perfumes, paints, automobiles, burning plastics, fish can trigger migraine headache with varying migraines. Odors can trigger migraine by activating different areas of the brain through trigeminal nociceptive pathway, activation of rostral pons by olfactory stimuli which is involved in the migraine progression and headache. As depicted above (Table. No. 10) are found have significant in triggering the migraine headache.

CONCLUSION

In the modern world, due to hectic schedule or work demands for a better lifestyle, stress, eating habits, environmental factors, usage of E-screens, hormonal imbalance greatly contributes to pathogenesis of

Ardhavabedhaka (migraine). As migraine creates disabilities in affected people, thus understanding about the etiology and pathogenesis provides solid pedestal in the management.

The study concluded that the majority of the *Nidanas* mentioned in the classical literature for *Ardhavabedhaka*, as well as current etiological factors observed in Migraine are found to have a significant role in the causation of *Ardhavabedhaka* (Migraine).

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