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The Role of Agnikarma in the Management of Ardhavabhedaka

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Abstract

Ardhavabhedaka is the *vishishtha shiroroga* of *shiras,* which has headache as a cardinal feature. Exactly the *swabhava* of *Ardhavabhedaka* cannot be compared to the modern diseases. A near comparison can be given as a unilateral headache. This term has been given under the study of migraine, which is one of the vascular types of headaches having unilateral manifestation with periodical relapses.

The *lakshanas* in *Ardhavabhedaka* are *Toda, Bhrama, Shanka, Bhru, Lalata, Karnashula, Skandagraha, Ghrana srava, Prakashaasahishnuta, Shabda asahishnuta[1]*, if remain untreated leads to grievous complications like *Nayana vinasha, Srotru vinasha.[2]*

Migraine is characterized by periodic, episodic, throbbing, pulsatile unilateral headache with elementary symptoms like nausea/vomiting/constipation/diarrhea/violent throbbing pain. Pain is located in one/half of the Temporal, Supra-orbital, Frontal, Retro bulbar, Partial, Posterior auricular, Occipital region, Upper or Lower teeth, base of the nose and down as far as tip of the shoulder.[3]

The approach to treatment for Migraine in modern system is the usage of analgesics, systemic treatment, metabolic corrections, refractive error corrections[4], etc. which more or less give temporary relief. So there is need for an optimum therapy which will decrease the intensity, delays the frequency and give longer better relief to the patients.

In this connection this study was undertaken to evaluate the comparative effect of *Agnikarma* in group A and *Nasya karma* in group B. *Agnikarma* with *Swarna shakakha* at *lalata pradesha* until *Samyak dagdha laxanas* were seen was carried out in group A and *Nasyakarma* for 7 days (8 drops in each nostril) with 7 times *Avrita ksheerabala taila* in group B. Then follow up was done for 3 weeks after the treatment to assess the results.

To assess the efficacy of treatment, the symptoms of *Ardhavabhedaka* such as *Shirashula* (Unilateral headache), *Avadhi* (Duration of attacks), *Vega* (Frequency of attacks) and Doppler study: of both right and left superficial temporal arteries (systolic and diastolic velocities) were noted carefully before commencement and after completion of the treatment.

Results in both groups were analyzed statistically by using Chi-square test, which showed highly significant results with Chi-square value = 8.118 and 'P' Value > .001

Keywords: *Ardhavabhedaka; Migraine; Agnikarma; Nasyakarma.*

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Introduction

Ardhavabhedhaka is one of the *shirorogas* mentioned in *Ayurved* classics having *shirashoola*(headache) as *pradhana vedana. Acharya Charaka, Sushruta[5]* and *Vagbhata* have explained *Ardhavabhedhaka* as *vishishta shiroroga.*

Headache represents one of the most frequent human discomforts. It is the ninth

most common cause for physician visit. The cardinal symptoms of Migraine are headache and nausea. However migraine headache is unilateral in onset and tends to become diffused in distribution in the later attacks.[6] The intensity and frequency of migraine headacheis extremely variable. Most of the patients suffer from throbbing type of pain, which gets aggravated by coughing, sneezing or vomiting and minimized by rest or by splinting of the head in one position.[7]

No satisfactory treatment is available in contemporary system of medicine for Migraine. The conventional treatment being Analgesics, Antiemetics etc. which more or less give temporary relief. So there is continuous search for better treatment, this instills a need for *ayurvedic* management of *Ardhavabhedhaka* (Migraine).

Looking into above facts there is a need for an effective treatment which reduces the recurrence as well as can prevent the complications of the disease.

For the same reason this study was planned to evaluate the comparative effect of *Agnikarma* and *Nasyakarma* in *Ardhavabhedaka.* Here *Agnikarma* with *Swarna shakakha[8]* until *Samyak dagdha laxana[9]* at *lalata pradesha*[10] was carried out. Clinical trial was conducted in two groups comprising of 20 patients in each group. Patients of Group A were treated with *Agnikarma* using *Swarna shalaka* and Group B were treated with *Nasya karma* using 7 times *avrita ksheerabala taila.* Then follow up was done for 3 weeks after the treatment to assess the results.

Materials and Methods

Source of data

Total 40 patients with classical signs and symptoms of *Ardhavabhedaka* (Migraine) were incidentally selected for the study from Out Patient Department and In patient Patient Department of Government Ayurveda Medical College and SJIIM Ayurveda Hospital, Dhanwantary Road, Anand Rao Circle, Bangalore.

Inclusion Criteria

Patients fulfilling the diagnostic criteria of *Ardhavabhedaka* (Migraine), Patients aged between 15 - 40 years of either sex with chronicity less than 3 years, Patients with complaints of classical migraine and chronic migraine were included for study.

Exclusion Criteria

Patients with intracranial pathology, Patients who were having other systemic disorders and with history of head injury, Patients were having complicated migraine; Ophthalmic migraine, Retinal migraine and Migraine unspecified were excluded from the study.

Diagnostic Criteria

Diagnosis was established on the basis of clinical symptoms mentioned in classical texts such as *Shirashula* (Unilateral headache), *Avadhi* (Duration of attacks), *Vega* (Frequency of attacks) and Doppler study: of both right and left superficial temporal arteries (systolic and diastolic velocities) were noted carefully before commencement and after completion of the treatment.

Source of Formulation used

Market brand (*Dhoota papeshwar,* Referance-*Sahasrayogam)* of 7 times *Avrita ksheerabala taila* for *Nasyakarma* is used. For *Agnikarma Swarna shalaka* containing Gold (70%), Silver (20%), Copper and traces (10%) with length of 7 centi meters, weing 4 grams and 1mm-pointed as diameter of the tip of the *Shalaka.*

Intervention

1. Group A patients were treated with *Agnikarma.* One sitting of *Agnikarma* was done with *Swarna shalaka* over *Bhrumadhyabhaga* (just above the supra

orbital region). Procedure was continued till *samyak dagda lakshanas* appear i.e. typical sound and smell were observed.

Follow up was done on 21st day after the treatment.

2. Group B patients were treated with *Nasya karma* with 7 times *avartita Ksheerabala taila* for 7 days(8 drops in each nostril)

Follow up was done on 21st day after the treatment.

Assessment criteria

Patients were asked regarding intensity of headache, its duration and frequency, 1 day before treatment and 3 weeks after the treatment. For assessment of results these parameters were graded as follows:

1. *Shirashula* (Unilateral headache)

S_0: Absent

S_1: Mild pain which is tolerable and does not cause any disturbance to carry out day to day work.

S_2: Moderate Pain which is tolerable, but causes discomfort while doing day today work.

S_3: Severe pain agonizing constant pain which keeps the patient isolated.

Pattern of change in shirashula with the treatment was considered for assessment of result. Total disappearance of shirashula after the treatment was considered as good result. Any change in the degree of shoola after the treatment was considered as fair result. No appreciate change in the degree of shoola after the treatment was considered as poor result.

2. *Avadhi* (Duration of attacks)

A_1: An attack lasting for 1-3 hours

A_2: An attack lasting for 3-6 hours

A_3: An attack lasting for 6-12 hours

An Attack lasting for 1-3 hours considered as mild degree. Complete absence of this pain after treatment was considered as 25% of result (poor result). An Attack lasting for 3-6 hour considered as moderate degree. After treatment to Mild degree -25% (Poor), Completely absence - 50% (Fair), An Attack lasting for 6-12 hour and above considered as severe, After treatment to, Mild degree **-** 25% (Poor), Moderate degree - 50% (Fair), Completely absence -75% (Good).

3. *Vega* (Frequency of attacks)

V_1: Interval between two subsequent attacks is 1week

V_2: Interval between two subsequent attacks is 2 weeks

V_3: Interval between two subsequent attacks is 3 weeks

Reduction in the frequency of attacks with the treatment was considered for assessment of results.75%-Result where time between two subsequent attacks is increased to 3 weeks ; 50%-time between two subsequent attacks increased to 2 weeks;25%- patient with next attack after a week. Delay in the frequency of attacks above 75% after the treatment was considered as good result. Delay in the frequency of attacks to more than 25% and less than 75% was considered as fair result. Delay in the frequency of attacks up to 25% after treatment was considered as poor result.

For the present study both right and left superficial temporal arteries were selected. Doppler study of these arteries was done during the time of shirashula, before starting the treatment. In this, the systolic velocity and diastolic velocity were recorded and also the ratio between systolic and diastolic velocity.

After the treatment, again Doppler study of both the right and left superficial temporal arteries was done velocities (i.e., systolic and diastolic) were noted. The overall response of the treatment. Any degree of improvement in all the 3 lakshanas was considered as Good response. Any degree of improvement in any of the two lakshanas was considered as Fair response. Any degree of improvement in any one of the lakshanas or no improvement in any of the lakshanas was considered as Poor response.

Observations

The selection was done on the basis of clinical examination. A careful clinical history of all those patients complaining of Headache (one side either left or right), Nausea, Vomiting, and Irritable to light and sound, Restlessness and with previous history of intermittent attacks of headache on the both sides, Pain in the frontal, temporal region was taken. The patients were then subjected to a thorough, examination and after establishing the diagnosis the patients were taken for the present clinical study.

In this clinical study more number of patients were females i.e. 24 (60%). This may be because females are more subjected to stress and tension than male. 30 (75%) patients were in the age group between 15 – 30 years. The age of onset is usually at or shortly after puberty, much less frequent in middle life or later, though an onset at about the menopause is not uncommon in women. Migraine is rare before puberty, but cyclical vomiting and travel sickness are common in childhood in those who subsequently develop it. Women are slightly more subject than men and often suffer more severely. 20 (50%) patients were with the chronicity of 2-5 years.

To speak about *Shirashula* (Unilateral headache) 26 (65%) were having moderate pain which is tolerable, but causes discomfort while doing day today work and 14(35%) patients were with severe pain agonizing constant pain which keeps the patient isolated. The reason behind this may be due to the intensity of migrainous headache which is extremely variable. It may be of incapacitating violence or so faint that its presence is only detested by the transient pain can sequent upon jolting of the head on coughing. Nor need the intensity remain constant throughout the attack, as low working and waning with a period of few minutes is commonly described and much longer remissions and exacerbations may also occur, particularly is protracted menstrual migraines.

On basis of site of pain, the incidence was high in fronto temporal area, observed in 25 (62.50%) patients. This might be because of pain from supratentorial structures is referred to the anterior two-thirds of the head, i.e. to the territory of sensory supply of the first and second divisions of the trigeminal nerve.

Considering parameter *Avadhi* (Duration of attacks) 15 (37.5%) patients were having attack lasting for 1-3 hours, 13 (32.5%) patients were having attack lasting for 3-6 hours and 12(30%) patients were having attack lasting for 6-12 hours this may be due to the duration of migraine headache is very variable. In extremely acute attacks (migrainous neuralgia) the pain may lost only for a matter of minutes. In a common migraine the duration is ready less than three hours, is commonly of 8 – 24 hours duration and occasionally lasts several days or in excess of a week.

In observation of *Vega* (Frequency of attacks) it was observed that 17 (42.50%) patients were having migraine attack with interval between two subsequent attacks as 1week, 13(32.50%) patients with interval between two subsequent attacks as 2 weeks, 11 (27.50%) patients with interval between two subsequent attacks as 3 weeks. The cardinal symptom of common migraine is headache. Competing this may be a remarkable variety of other major symptoms. Great variability of symptoms is characterized not only of attacks in different patients but between successive attacks in the same patients.

Color Doppler study was done in all the patients of both groups. 17 (42.50%) patients were shown mild degree of abnormal changes in velocities of the arteries, 13 (32.50%) patients were shown moderate degree of abnormal changes in velocities of the arteries and 10(25%) patients were shown severe degree of abnormal changes in velocities of the arteries.

Results

After completion of the treatment, among 20 patients in Group A, *Shirashula* was disappeared in 15 (75%), patients, 3 (7.50%) patients were having Mild pain which is

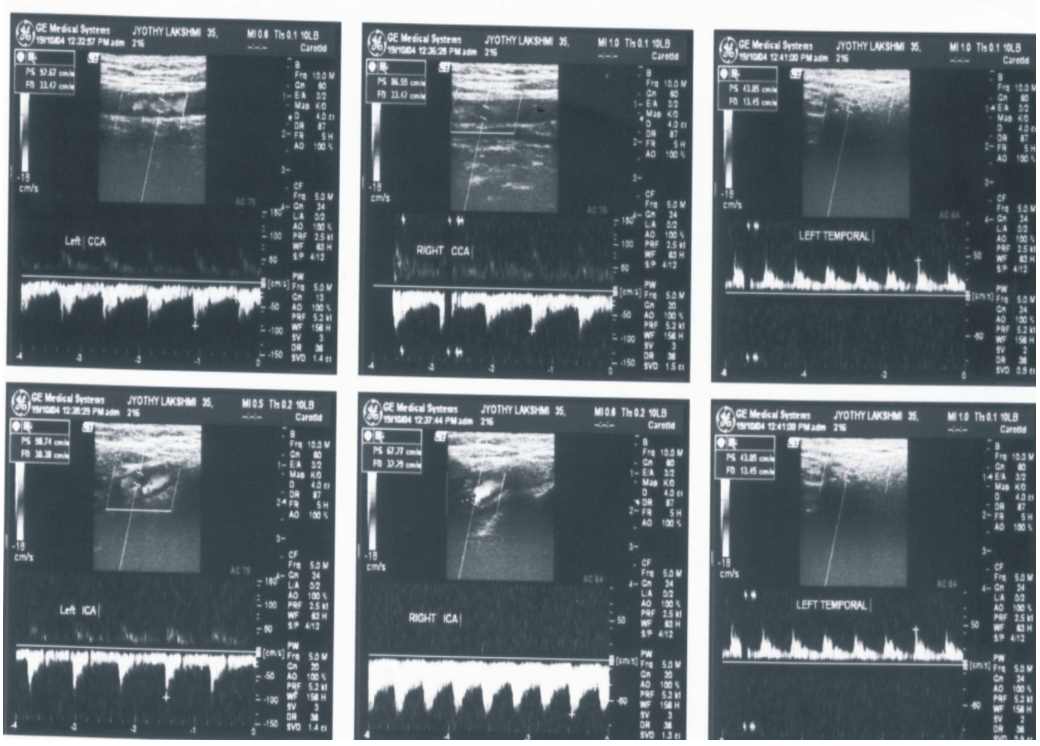
Table 1: Showing results of parameters *Shirashula* (Unilateral headache), *Avadhi* (Duration of attacks), *Vega* (Frequency of attacks) before and after treatment procedures

Parameters	Group A Before Treatment	Group A After Treatment	Group B Before Treatment	Group B After Treatment
Shirashula				
S_0	00	15	00	12
S_1	00	03	00	03
S_2	06	02	08	05
S_3	14	00	12	00
Avadhi				
A_1	08	12	07	06
A_2	06	06	07	07
A_3	06	02	06	07
Vega				
V_1	10	12	07	12
V_2	06	06	06	08
V_3	04	02	07	00

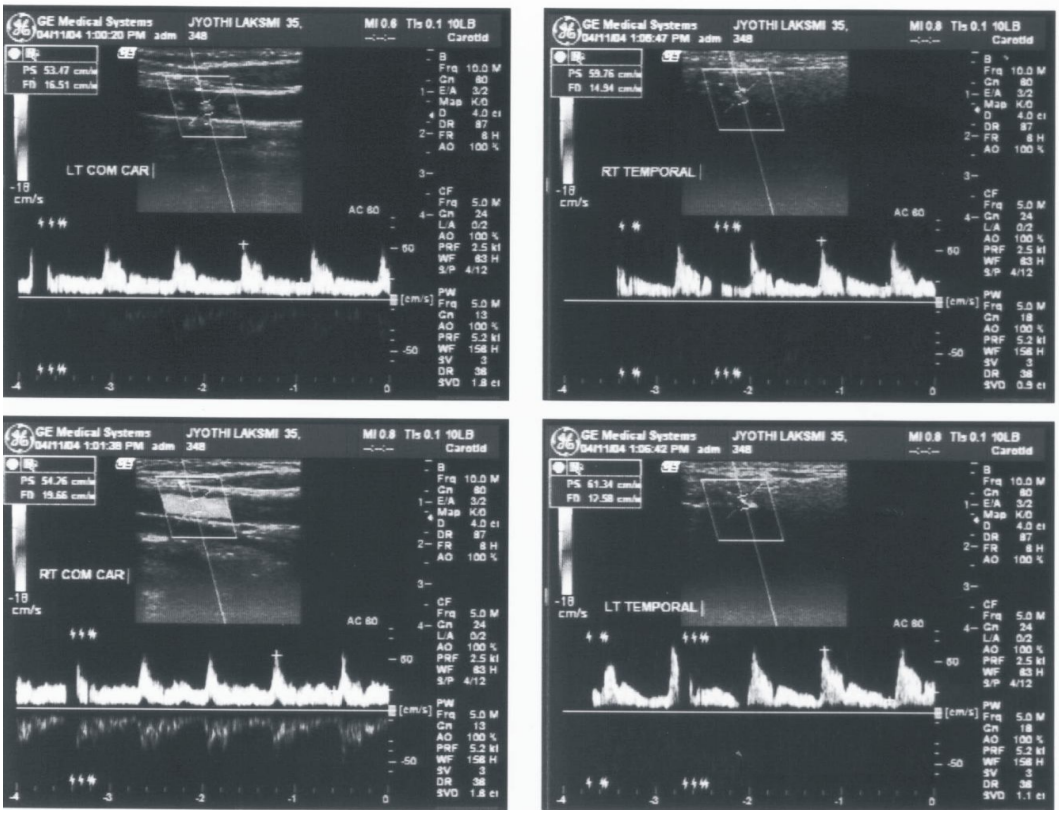
Table 2: Showing Spectral values of Doppler study before and after *Agnikarma*
Case No – 9 Group-A Female Patient: 35 years

	Before treatment		After treatment		S/D Ratio	
	V1	V2	V3	V4	I	II
Right Central Carotid	72.32	24.28	66.84	21.44	1.09	3.48
Left Central Carotid	68.25	21.32	62.67	13.85	3.77	3.49
Right Internal Carotid	62.09	28.04	46.83	18.58	2.79	3.95
Left Internal Carotid	65.09	26.05	43.25	16.51	2.27	2.51
Right temporal	73.55	25.26	91.40	20.18	3.56	4.51
Left temporal	74.62	20.32	64.69	17.60	3.52	4.31

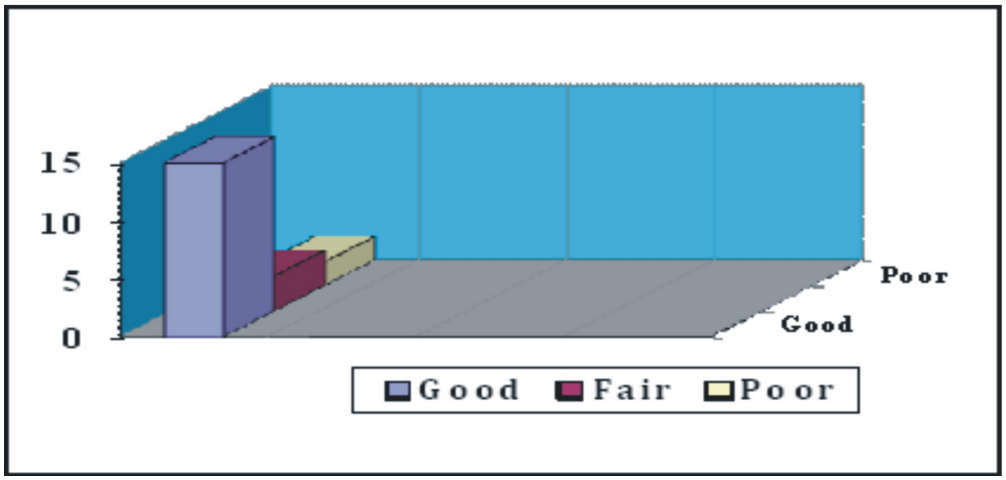
Photographs of Color Doppler study showing pictures before and after Agnikarma
Before Treatment



After Treatment

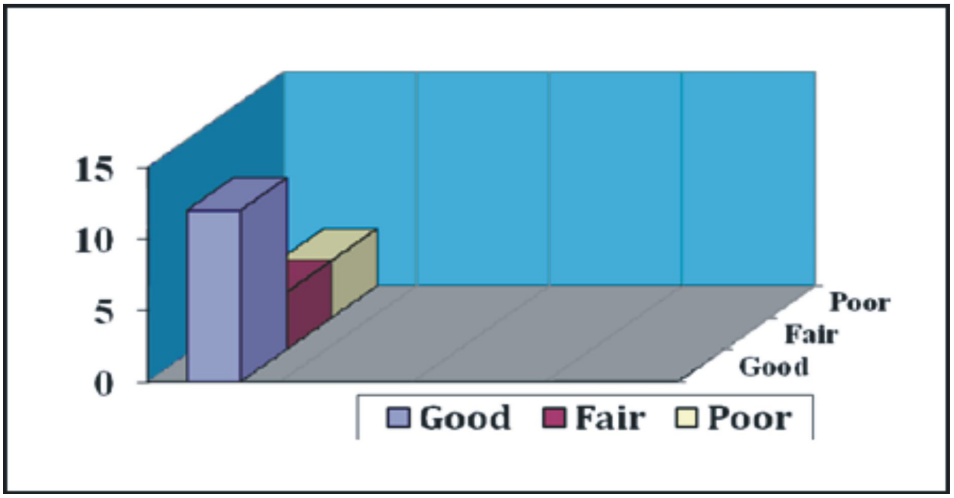


Graph 1: Bar Diagram showing response to results in Group A



tolerable and does not cause any disturbance to carry out day to day work, 2(5%) patients were having Moderate Pain which is tolerable, but causes discomfort while doing day today work and no patients (0%) were left behind with Severe pain agonizing constant pain which keeps the patient isolated. In group B among 20 patients *Shirashula* was disappeared in 12 (75%) patients 3 (7.50%) patients were having Mild pain which is tolerable and does not cause any disturbance to carry out day to day work, 5(12.5%) patients were having Moderate Pain which is tolerable, but causes discomfort while doing day today work and here also no patients (0%) were left behind with Severe pain agonizing constant pain which keeps the patient isolated.

Graph 2: Bar Diagram showing response to results in Group B



Considering the results obtained in relation to *Avadhi* (Duration of attacks) in group A, 12 (30%) patients were relieved with an attack lasting for 1-3 hours, 6 (15%) patients were relieved patients an attack lasting for 3-6 hours and 2(5%) patients were relieved with an attack lasting for 6-12 hours. In group B 6(15%) patients were relieved with an attack lasting for 1-3 hours, 7 (17.5%) patients were relieved patients an attack lasting for 3-6 hours and 7 (17.5%) patients were relieved with an attack lasting for 6-12 hours.

In *Vega* (Frequency of attacks) notable changes were seen in relation to time gap between two subsequent attacks of migraine. In group A – In 12 (30%) patients the Interval between two subsequent attacks was 1 week, in 6 (15%) patients the Interval between two subsequent attacks was 2 weeks and in 2 (5%) patients the Interval between two subsequent attacks was 3 weeks In group B – In 6 (15%) patients the Interval between two subsequent attacks was 1week, in 7 (17.50%) patients the Interval between two subsequent attacks was 2 weeks and in 7 (17.5%) patients the Interval between two subsequent attacks was 3 weeks.

The results of color Doppler study after the treatment in group A are comparatively significant than in group B. In group A – 8 (20%) patients were shown changes in the readings with improvement in all the three *lakshanas,* 7 (17.50%) patients were shown changes in the readings with improvement in two *lakshanas,* 5 (12.50%) patients were shown changes in the readings with improvement in one *lakshana.* In group B- 6 (30%) patients were shown changes in the readings with improvement in all the three *lakshanas,* 7 (17.50%) patients were shown changes in the readings with improvement in two *lakshanas,* 7 (17.50%) patients were shown changes in the readings with improvement in one *lakshana.*

After clubbing together the results in each of the symptoms in two different groups, the final i.e., overall assessment can be made as follows:

Group A: Out of 20 patients in 15 (75%) patients the response was good, whereas there was fair response in 3 (15%) patients and 2 (5%) patients showed poor response.

Group B: Out of 20 patients, 12 (30%) patients showed good response and 4 (10%) patients showed fair response, whereas in 4 (10%) patients response was poor.

Discussion

In modern science migraine is characterised by periodic episodic throbbing pulsidize unilateral headache with elimentary symptoms like nausea/vomiting/ constipation/diarrhea/violent throbbing pain. Pain is located one/half of the Temporal

region, Supra-orbital region, Frontal, Retrobulbar, Partial, Posterior auricular region, Occipital region, Upper or Lower teeth, Base of the nose and down as far as Tip of the shoulder.

There is difference of opinion regarding the dosha predominance in *Ardhavabhedaka* among *Acharyas. Charaka* and others consider it as *vata kaphaja,* whereas *Vagbhata* opines it to be purely *Vataja. Sushuruta* is of opine that it is *tridoshaja.* But as observed during the study symptoms presented by the patients were more favoring the involvement of *vata* and *kapha dosha.* Of course *pitta* involvement was also there in few patients. *Bhela* opines that it is *sudustara.*

In this study, the effect of *Agnikarma* done with *Swarna shalaka* was compared with *Nasya karma* with seven times *Avrita ksheerabala taila.*

Clinical trial was conducted in two groups comprising 20 patients in each group. Group A was treated with *Agnikarma* using *Swarna shalaka* and Group B was treated with *Nasya karma* using 7 times *Aavrita ksheerabala taila.*

In clinical group on the basis of Sex it was noticed to be high in female i.e., 24 (60%). This is because of female subjected to more stress and tension than male.

In clinical groups on the basis of Age it was noticed to be high in the Age group between (15 – 30 years) i.e., 30 patients (75%). This is because of exposure to sunlight and *rooksha ahara sevana.*

In clinical groups on basis of Occupation it was noticed to be high in Students and Housewives i.e., 12 patients (30%) in each group. This is because of study habits in students and stress and tension in housewives.

In clinical groups, on basis of Chronicity incidence it was noticed to be high in 2 – 5 years i.e., 20 patients (50%). This may be familial as it was found that their family had previous history of migraine.

In clinical groups, on basis of site of pain, the incidence was high in fronto temporal area. This type was seen in 25 patients (62.50%).

The mode of response of two groups after the treatment with application of standard criteria mentioned earlier is very good, good and satisfactory.

Among 20 patients in Group A, 15 patients (75%) showed very good response and among 20 patients in Group B, 12 patients (60%) showed very good response after the treatment.

Also Statistical outcome was observed to be highly significant;

Chi-square value = 8.118

'P' Value > .001

This reveals that the Group A patients who were treated with *Agnikarma* using *swarna shalaka* responded more effectively than Group B who were treated with 7 times *Avrit ksheerabala taila.*

Agnikarma is having both *doshaharatwa* and *vyadhiharatwa guna.*

The response obtained after *Agnikarma* procedure and 21 days follow-up study reveals that the mode of response to classical therapeutic procedure adopted in clinical groups was very good in treating *Ardhavabhedaka.* Hence the *Agnikarma* can be confidently done in OPD as well as IPD level for treating *Ardhavabhedaka.*

Probable Mode of Action of Agnikarma

Heat is often used to relieve pain in many disorders and diseases however the exact of its action and mechanism is not clearly understood. During *Agnikarama, Agni* is transferred from the *Shalaka* to the *Dushya Dhatu.* The Time taken for this transfer of the heat is 2 or 3 seconds. By this the *Dhatwagni* in the skin become *Utkleshita* i.e. becomes activated. The disease producing *dosha* become neutral by *Dosha pachana* action of the *Utkleshita Dhatwagni.*

Pain related with ischemia may be reduced by heat- induced vaso- dilatation, with cells and chemicals brought to the area, to assist healing and remove the broken down products of injury.

Heat has also been claimed to act as a "counter irritant". It has been suggested that such responses might be explained on the basis of the pain gate control theory; in that the transmission of thermal sensation may take precedence noiceptive (nociceptors are generally free nerve endings embedded through out the tissue impulses).

Tens effects

Transcutaneous electrical nerve stimulator or stimulation, is used to stimulate the nerve, muscle, and cells via surface skin by low electricity to make the brain produce endorphin naturally and then to reach the goal of relieving syndromes and stopping pain.

Probable Mode of Action of Nasya Karma

Regarding the mechanisms of action of *nasya karma,* the hypothesis can be drawn that acts both at local and general levels, the direct contact with nerve terminals or uptake of drugs by the nasal mucosa.

Explanation regarding the action through local levels or direct contact with nerve terminals as - It is currently known in the literature that the trigeminal nerve, through its trigemino vascular system is deeply involved in the genesis and maintenance of pain in headache syndromes. The nasal mucosa which comes into contact with drugs applied directly involved in *nasya* therapy is supplied with both the ophthalmic as well as maxillary branches of the trigeminal nerve. Direct counter irritation or stimulation to these nerve terminals could cause distal changes in the trigeminal ganglion itself. The result of these hypothetic changes in the firing of trigeminal neurons could lead to alleviation of pain.

The ptergopalatine ganglion could also be involved in the local effects of nasya. This ganglion lies on the anterior wall of the pterygopalatine fossa right below the maxillary nerve and it is easily accessible through the nasal cavity. The pterygopalatine ganglion has sensory, parasympathetic and sympathetic fibres from carotid plexus. Direct stimuli to these sympathetic fibres could cause changes in the carotid vascular motility, helping to allevate the symptoms of headache.

Vridda Vagbhata who first narrated the mode of drug action by *nasya karma.* The medicine administered will reach the *sringataka srotas* and spreads to the *siras* of eye, ear and throat etc and to the head *(murdha).* The authors like *Arundatta* have followed the same path of description. *Sushrutha* described *sringataka marma* as a *sira marma* occurring at the site of union of *siras* supplying to the nose, eye, ear and tongue. He further points out that injury to this *marma* is fatal immediately. Scholar *Indu* in his commentary on *Astanga sangraha* has defined *shringataka* as the inner side of middle part of head. *(Siras antarmadhya)* probably this may be referred to paranasal areas consisting air sinuses and blood vessel.

Conclusion

The treatment measure selected for the study was found to be more beneficial in the patients where the chronicity was less than or equal to two years. More number of patients were with complaining of severe pain agonizing constant pain which keeps the patient isolated with interval between two subsequent attacks of 1week and an attack lasting for 1-3 hours. Agnikarma has significant effect in relieving such pain in cases of *Ardhavabhedaka.* Authenticity of *Ayurvedic* reference which says that the diseases treated by *Agnikarma* do not reoccur is established since there was no reoccurrence of pain in any of the cases in Group A. The mental acceptability of the patients, for *Agnikarma* was satisfactory. The procedure of *Agnikarma* is simple, Economical and do not require hospitalization. It can be done in out patient department itself. As sample size in this present study was small, so high claims could not expect. However the future scholars can take up this study with more number of cases to further establish the claims. No untoward effects were observed in

any of the cases.

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