

## AN OBSERVATIONAL CLINICAL STUDY TO EVALUATE SHIROROGA NIDANA IN CEREBROVASCULAR ACCIDENT

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### ABSTRACT

*Shiroroga* is a broad term encompassing various diseases of the head involving *Rakta Dushti* due to vitiated *Doshas*.<sup>[1]</sup> resulting in different neurovascular presentations, which is comparable with the vascular pathology of stroke. Cerebrovascular diseases include some of the most devastating disorders such as ischemic stroke and haemorrhagic stroke, which result in episodes of brain dysfunction.<sup>[2]</sup> Currently, the stroke incidence in India is much higher and prevention of stroke is the best option, through control and/or avoiding risk factors such as hypertension. **Objective:** This calls for an evaluation of the possible *Shiroroga Nidana* in the development of Cerebro Vascular Accident (CVA) to identify more risk factors. **Methods:** In this cross-sectional observational study, 30 subjects diagnosed with the cerebrovascular accident were selected. The probable incidence of *Nidana* (causes), in patients, were assessed through a questionnaire developed for the study. The recorded data were analysed with descriptive statistics. **Results:** *Nidana*, like *Vegadharana* and *Rodana* causes *Rakta Dushti* along with *Vata Prakopa*. *Aharaja Nidanans* of *Shiroroga* are similar to that of *Rakta Dushti Nidana* and directly causes *Dhatu Pradooshana* in the body. *Manasika Nidana* or anxiety and emotional stress acts as *Vyanjaka* or *Preraka*

*Hetu* in *Samprapti* of *Shiroroga*. **Conclusion:** *Bahya Hetu* (external factors) triggers *Dosha Kopa* or causes *Dhatu Pradooshana*. In CVA patients, *Vata Pradhana Tridosha Kopa* and *Rakta* were vitiated to initiate the disease manifestation.

**Keywords:** Cerebrovascular Accident; *Nidana*; *Shiras*; *Shiroroga*; Stroke.

## INTRODUCTION

*Shiroroga* (the diseases affecting the head) are described elaborately because the *Shiras* (head) being the seat of the brain controls the Omni-controller *Prana Vayu* (vitality). *Acharya Charaka* put forth the concept of *Trimarma* (three vital parts).<sup>[3]</sup> He considered *Shiras*, *Hrudaya* (heart), *Basti* (urinary system) as *Marma*— the most important vital parts or the root of *Shareera* (body).<sup>[4]</sup> He explained clinical manifestations due to *Dosha Abhighata* (injury due to internal causes) where all three *Dosha* (regulatory factors of the body) are involved.<sup>[5]</sup> The *Dosha Abhighata Lakshanas* (clinical features) of *Shiras* present various neurological emergencies. *Acharya Charaka* begins *Rogachatushka* with the description of *Shiroroga*, one among which is *Ardita*, the description of which closely resembles the clinical features of CVA. Stroke is the second leading cause of death worldwide, and the most common cause of severe physical disability.<sup>[6]</sup> A stroke, or cerebrovascular accident, is defined as an abrupt onset of a neurologic deficit that is attributable to a focal vascular cause.<sup>[7]</sup> This present era is going through significant changes in entire thinking patterns about the problems of health in human beings. All combined efforts are for maintaining health in the community and prevent the incidence of disease. Ayurveda also gives importance to the concept of maintaining health or prevention diseases. Stroke is preventable to a large extent as many of the risk factors for stroke are modifiable like high blood pressure, smoking, obesity, lack of physical activity and unhealthy diets. All these indicate the urgent need for better identification and understanding of risk factors to improve both primary and secondary prevention.<sup>[8]</sup> This calls for an evaluation of the possible *Shiroroga Nidana* in the development of CVA for the identification of more risk factors or causes.

### Aim & Objectives

The present study clinically assesses *Shiroroga Nidana* in patients with cerebrovascular accidents.

### Materials & Methods

#### Source of Data

30 patients diagnosed with Cerebro Vascular Accident attending OPD & IPD of Sri Dharmasthala Manjunatheswara Ayurveda Hospital, Udupi were selected for the study.

#### Study Design

It was an observational study on 30 patients diagnosed with a Cerebrovascular accident, using the diagnostic parameters. A detailed history about their regular food habits and daily regimen was taken to assess the probable incidence of *Nidana* and the recorded data were analysed with descriptive statistics.

#### Inclusion Criteria

1. Diagnosed cases of CVA.
2. Patients of either gender will be taken.
3. Patients aged above 20 years.

#### Exclusion Criteria

1. Intracranial space-occupying lesions
2. Cases of head injury
3. Cases with metabolic errors due to hepatic or renal disorders.

#### Assessment Criteria

- Assessment of *Shiroroga Nidana* in patients of cerebrovascular accident was done using a questionnaire developed for the study.
- The frequency of each *Nidana* was assessed through a Likert-type scale.

**Table 1:** Likert Like Scale

Frequency	Likert like scale	No of days/week
Always	In about 90% and above of chances I could have	6-7 days in a week
Often	Frequently about 70% of chances I would have	5-6 days in a week
Sometimes	50 % and above chance I would have used	2-4 days in a week
Rarely	10% and above chance I would have	1 or 2 days a week
Never	0 % chance	Not more than one day a week

- Always and often were considered as *Ati Sevana* of *Nidana*

**RESULTS**

The observations and results obtained after the evaluation of *Shiroroga Nidana* in CVA patients are as follows.

**Table 2:** *Aharaja Nidana* of *Shiroroga* in CVA patients

<i>Aharaja Nidana</i>	Always	Often	Sometimes	Rarely	Never
<i>Guru Ahara</i>	0 %	36.7%	16.7%	23.3%	23.3%
<i>Amla Ahara</i>	6.7%	33.3%	16.7%	23.3%	20%
<i>Harita Shaka</i>	33.3%	53.3%	6.7%	6.7%	0%
<i>Sheetambu</i>	43.3%	26.7%	20%	0%	10%
<i>Atyambu</i>	33.3%	16.7%	26.7%	3.3%	20%
<i>Madyapaana</i>	13.3%	13.3%	6.7%	0%	66.7%

**Table 3:** *Viharaja Nidana* of *Shiroroga* in CVA patients

<i>Viharaja Nidana</i>	Always	Often	Sometimes	Rarely	Never
<i>Vegadharana</i>	0%	3.3%	40%	33.3%	23.3%
<i>Rodana (crying)</i>	0%	3.3%	33.3%	10%	53.3%
<i>Diwaswapna</i>	60%	0%	10%	3.3%	26.7%
<i>Ratri Jagarana</i>	13.3%	0%	13.3%	3.3%	70%
<i>Uchair Bhashya</i>	33.3%	20%	20%	3.3%	23.3%
<i>Utsweda</i>	40%	16.7%	16.7%	3.3%	23.3%
<i>Adha Pratatekshana</i>	40%	33.3%	6.7%	0%	20%

**Table 4:** *Manasika Nidana* of *Shiroroga* in CVA patients

<i>Manasika Nidana</i>	Always	Often	Sometimes	Rarely	Never
<i>Shoka</i>	26.7%	36.7%	10%	0%	26.7%
<i>Krodham</i>	20%	30%	20%	0%	30%
<i>Chinta</i>	36.7%	23.3%	23.3%	6.7%	10%
<i>Bhayam</i>	16.7%	13.3%	3.3%	3.3%	63.3%

**Table 5:** Other *Nidana* related to the climate of *Shiroroga* in CVA patients

Other <i>Nidana</i>	Always	Often	Sometimes	Rarely	Never
<i>Avashyaya</i> /cold exposure	16.7%	36.7%	20%	20%	6.7%
<i>Pragvata</i>	20%	20%	43.3%	13.3%	3.3%
<i>Dhooma</i> /exposure to smoke	60%	20%	20%	0%	0%
<i>Asatmya Gandha</i>	16.7%	30%	30%	10%	13.3%
<i>Rajas</i> /dust	40%	46.7%	10%	3.3%	0%
<i>Atapa</i> /sunlight	36.7%	26.7%	20%	16.7%	0%

## DISCUSSION

The *Nidana* can be understood as *Bahya* and *Abhyantara Hetu*. *Bahya Hetu* are *Aharaja*, *Viharaja*, *Manasika Nidanans* which causes *Dosha Dushti*. *Abhyantara Hetu* is *Dosha* and *Dooshya* involved in the disease.

### **Ahara**

*Guru*, *Amla* and *Harita Shaka* are described as *Nidana* of *Shiroroga*. *Ahara* is having 6 *Rasa*, 20 types of *Guna*, 2 *Veerya*, 3 types of *Vipaka*, various *Karma* and *Prabhava*. The mode of action is sometimes unpredictable for *Dravya* due to numerous influencing factors. But *Ahara* is taken daily and continuous use of any food as *Ahara* will cause *Dosha Chaya* and act as *Viprakraushta Hetu* for *Vyadhi* manifestations.

*Guru*, *Amla*, *Harita Ahara* directly cause *Vyadhi Utpatti* and act as *Vyadhi Hetu*. Mechanism of action is by *Rakta Dhatu Dushti*. These act as *Dhatu Pradooshana Dravya*.

### **Jala (excess use of water / cold water)**

It can be both *Sheetambu* (cold water) or *Atyambu* (excess drinking of water). Always and often are considered as *Atiyoga* of *Nidana Seva*.

*Sheetambu* precipitates *Vata Kopa* and affects *Shiras*. Our body responds to a cold environment either outside or inside through hypothalamic regulation.

*Atyambu* is excess of *Ambu Dhatu* or *Ati Dushti* of *Ambu Dhatu*. *Atyambu* causes *Rasa- Raktadi Dhatu Dushti* by *Kapha* alone or *Kapha -Pitta Kopa*. Both *Sheetambu* and *Atyambu* acts as *Doshabala Pravrutta Nidana*.

### **Madyapaana**

*Madya* directly affects *Ojus* in *Hrudaya* as well as leads to *Rakta Dushti* in *Dasha Dhamani* causing *Shiroroga*. *Varuni* type of *Madya* will directly cause *Medo Vaha Sroto Dushti* and *Dushta Medus* which is *Abhadha* form move in *Rasa-Rakta Marga* causing *Dhamani Pratichaya* and *Margavarana Janya Pakshaghata*. Due to a fewer number of subjects, *Madyapana* as a *Nidana* is not established in the study.

### **Vegadharana**

*Vegadharana* causes *Vata Prakopa* and these all produce *Shiroroga* by acting as *Viprakraushta Nidana* (distant cause). Specifically, *Ashru* and *Kshavathu*

*Vegadharana* cause *Prana Vata Dushti*, while *Mootra*, *Mala* causes *Apana Vata Dushti*. *Avarodha* by *Apana* leads to *Dushti* of other *Vata Dosha*. *Vegadharana* acts as *Dosha Hetu*.

### **Rodana (crying)**

*Atiyoga* of *Rodana* (crying) is *Udeerana* of *Ashru*. It also causes *Vata Kopa* and affects *Indriya* (sense organ of vision) directly leading to *Shiroroga*. Excess stress or mental tensions will cause emotional breakdown and most persons express it through crying. Such stress gives strain to the heart, increases blood pressure and sugar levels. *Rodanat* may be considered as *Viprakraushta Nidana* in CVA.

### **Diwaswapna and Ratri Jagarana**

*Diwaswapna* causes *Tridosha Dushti* and *Ratrijagarana* cause *Vata-Pitta Dushti*. *Atiyoga* of *Diwaswapna* was observed more than *Ratrijagarana* in study subjects. *Diwaswapna* increases *Snigdha Guna* and is said to be *Abhishyandi* in *Charaka Samhita*. It does *Lepana* in *Srotases* which carry *Rasa Raktadi Dhatu* from *Hrudaya* due to *Abhishyandana*. *Diwaswapna* act as *Viprakraushta Nidana* in *Shiroroga*.

### **Ucchair Bhashya (Loud Speaking)**

In loud speaking, there is excessive use of sound, increases blood pressure and increased consumption of energy. *Vak Pravrutti* is mainly controlled by *Udana Vata*. *Atiyoga* or *Mithya Yoga* of *Vak Pravrutti* causes *Rasa Rakta Dhatu Kshaya* and *Udana Vata Kopa* and produce disease. It is included under *Asatmya Indriyarth Samyoga*.

**Utsweda (excess sweating):** *Utsweda* is *Urdhwa Sweda* (excess sweating). It is seen in different diseases. *Utsweda* is indirectly related to stroke causation by triggering risk factors. For example, excess sweating may be due to diabetic hypoglycemia. It causes the ischemic effect on the brain and leads to stroke mimics.

It rather acts as *Preraka Hetu* in *Shiroroga*, and the majority of patients had repeated episodes of *Utsweda*.

**Adha Pratatekshana:** *Adha Pratatekshana* resembles a stooped neck posture. In the study, *Atiyoga* of *Adha Pratatekshana* was noticed in patients either by mobile usage or continuous sitting and standing in stooped

neck posture. Such wrong postures put pressure on vertebral arteries supplying the head and cause CVA. These type of causes acts as *Vyanjaka / Preraka Nidana* (triggering factors) for CVA.

**Manasika Nidana:** All mental stress causes raised blood pressure which triggers the manifestation of stroke. Many studies proved patients were under emotional stress on previous days of onset.

*Manasika Nidanas* in *Ayurveda* were categorised into that causes *Pitta Prakopa* and *Vata Prakopa*. *Krodham* or anger causes *Pitta Prakopa* and directly vitiates *Rakta Dushti* and causes *Shiroroga*.

*Shoka* (depression), *Chinta* (tension), and *Bhayam* (fear) all causes *Vata Prakopa* and lead to *Shiroroga*. *Manasika Nidanas* acts as *Dosha Hetu*.

**Avashyaya (Cold Exposure):** Cold exposure causes *Vata Prakopa* by *Guna Samanya*. In extreme cold, there will be alteration inflow of blood due to vasoconstriction which all trigger *Rakta Dushti* and causes *Shiroroga*.

**Pragvata (Exposure to Wind):** Exposure to cold winds cause causes cold stress which triggers vasoconstriction and strain the heart. To maintain circulation, blood pressure and heart rate increase. A sudden rise in blood pressure with outdoor exertion can cause a stroke. *Pragvata* acts as *Preraka Nidana* (triggering factor) for CVA.

**Dhooma (any kind of smoke)**

All patients had exposure to *Dhooma*, with *Atiyoga* in the majority of individuals and *Dhooma* exposure also causes *Indriya* and *Rakta Dushti*. Sense organs are in close contact with the external environment and slight changes also cause disease.

**Asatmya Gandha (bad or noxious odours):** Exposure to bad smell or noxious odours trigger vomiting centres in the brain. Such repeated stimulation could have bad effects on the nervous system and causes *Shiroroga*. But the association is not established in CVA.

**Rajas (dust):** In the study, there was exposure to dust in all 30 subjects with a varied frequency of exposure. *Atiyoga* of *Nidana Seva* was seen in 86.7% of subjects and establish its role as a causative factor.

Exposure to outdoor air pollution has been associated with an increased risk of stroke, Harmful air pollutants include gases and particulate matter (PM). Airborne PM which is less than 10 µm in aerodynamic diameter (PM10) can penetrate the airways and thus have the most adverse health effects.

Several epidemiological studies have found both short as well as long-term associations with ischemic stroke, although associations with hemorrhagic stroke are less consistent.<sup>[9]</sup>

**Atapa (Sunlight):** The majority of subjects had exposure to *Atapa* daily for labourers and such persons who work outside. Hemorrhagic strokes were believed to have onset after vigorous activity like such occupations. It vitiates *Pitta* and causes *Rakta Dushti* for the manifestation of disease. *Atapa* acts as *Preraka Hetu*.

**Discussion on the involvement of Dosha & Dhatu**

Though there is a description of *Tridoshas* in *Shiroroga Samprapti*, *Vata* involvement was noted more in the study. This may be because all 5 subtypes of *Vata Dosha* take up the nervous system functions including the control motor and sensory activities more than other *Doshas*. A small per cent of *Tridosha* involvement was also observed and further study with a larger sample size is needed to check the involvement of *Tridoshas*. There is the direct involvement of *Rakta Dhatu* in *Samprapti* and being the *Drava Roopa Dhatu Rasa* and *Rakta* moves together. These channels which carry *Rasa* and *Rakta Dhatu* are protected by *Mamsadhara Kala* and any injury will affect the normal functioning of all three *Dhatu*s. *Mamsa* and *Medo Dhatu Kshaya* are inferred from the clinical presentation of *Shithila Sandhi*, *Soola* and *Bala Kshaya*. *Majja Dhatu* forms the structure of *Mastulunga* and is directly involved in *Samprapti*.

## CONCLUSION

To summarise, *Bahya Hetu* were predominantly *Vata Prakopakara*. Some observations showed the involvement of other *Dosha* vitiation and *Rakta Dushti*. *Shiroroga Samprapti* where *Rakta Dhatu Dushti* in *Shiras* explains both ischemic and hemorrhagic pathology of CVA. Understanding

Stroke from the view of *Pakshaghata* as *Vata vyadhi* limits the knowledge of the involvement of other *Doshas* and vascular pathology in stroke. Clinical observation study concluded that there is a definite role of *Shiroroga Nidana* and *Samprapti* in the better understanding of CVA along with *Pakshaghata* or *Vata Vyadhi Samprapti*.

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