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Trividha Bodhya Samgraha of Cerebrovascular Accident

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ABSTRACT

Different opinions exist in Ayurveda regarding clinical presentation of *Pakshaghata* (hemiplegia) especially involvement of motor functions, sensory symptoms, and varying level of consciousness. *Ardita Lakshanas* (symptoms of paralysis) explains more detail about cranial nerves involved in stroke. *Chikitsa Sutra* (treatment principle) of *Pakshaghata* is adopted commonly in Cerebro Vascular Accident (CVA) patients. Time has come to explore further to understand the pathology of CVA. Understanding CVA only as *Vata Vyadhi* (disease of *Vata Dosha*) limits the significance of *Adhishtana* (site) in *Shiras* (head) and the *Rakta Dushti* (abnormalities in blood) occurring in pathogenesis of *Shiroroga* (diseases of head). There is a need to widen the ways of understanding a disease with Principles of *Roga Nidana* (diagnosis of disease). Data collected from Ayurvedic literature along with modern texts and articles were critically analysed and presented in systematic way. Critical assessment of *Shiroroga Samprapti* (pathogenesis) in CVA could help in adopting treatment modalities mention in *Shiroroga* in cases of CVA patients. Here an attempt is made to study the etiopathogenesis of *Shiroroga* with special reference to cerebrovascular accidents, with an intention to expand the understanding of the disease, which may prove helpful in identifying additional risk factors and hence better prevention of CVA.

Key Words*Cerebrovascular Accident, Nidana, Pakshaghata, Shiroroga, stroke, Trividha Bodhya Samgraha*

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INTRODUCTION

Primary aim of a Vaidya is alleviating the suffering of the patient. It is achieved through proper diagnosis of disease followed by appropriate treatment. Diseases are innumerable owing to permutations in *Ruja* (pain), *Varna* (colour), *Samuthana* (cause), *Sthana* (site), *Samsthana* (clinical feature) and *Nama* (name)[1]. A disease never exists without the involvement of *Doshas* (regulatory factors of body). When a disease is not explained as separate *Vyadhi* (disease) in Ayurveda, its pathogenesis and clinical manifestations should be understood based on Dosha Lakshana[2].General principle for diagnosing any disease is based on the three concepts explained under the concept of *Trividha Bodhya Samgraha* (triads of disease).

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The *Dosha Abhighata Lakshanas* (symptoms due to internal causes) of *Shiras* explained by Acharya Charaka presents as various neurological emergencies which are commonly encountered in our present time. The most common among them are *Ardita, Pakshaghata* in which the features are like that of Cerebro Vascular Accidents.

Stroke and cerebrovascular diseases are very frequent and are associated with adverse consequences in terms of death and disability. Stroke is the second leading cause of death worldwide and incidence of stroke keep on increasing especially in developing countries.

This present era is going through the significant changes in entire thinking pattern about the problems of health in human beings. All combined efforts are for maintaining health in community and prevent incidence of disease. Ayurveda also gives importance to concept of maintaining health or prevention of diseases.

To prevent the disease, a wider understanding of Cerebro Vascular Accident (CVA) is essential from the perspective of principles of diagnosis before going for treatment. This wider understanding will shed light on the significance of *Adhishtana* in head and the *Rakta Dushti* occurring in pathogenesis of CVA.

MATERIALS & METHODS

Data was collected from available Ayurvedic and modern literature and online published works. These data were critically analysed and presented in systematic way.

TRIVIDHA BODHYA SAMGRAHA

These are the three methods for the diagnosis of a disease mentioned by *Acharya Caraka* in *Roga Catuska*[3]. They are *Vikara Prakrti, Samuthana Visesha, Adhishtana Antharani*[4]. *Trividha Bodhya Samgraha* are 3 different ways of understanding a disease. The term Bodhya refers to process of *Bodhana* – instructing, understanding.

Samuthana Visesha are the *Hetu* (causes) that leads to manifestation of a disease. It gives the etiological diagnosis of a disease. *Vikara Prakruti* is the specific clinical features of a disease which gives the understanding about the *Dosha* involved in a *Roga* (disease). These cardinal manifestations in a disease gives the clinical diagnosis of a disease. *Adhishtana Antarani* refers to *Sthana* (abode) of disease manifestation. It gives idea about *Rasadi Dhatus* (seven structural elements of the body) and *Ashaya* (internal organs) which are involved in manifestation of disease. This is the pathological diagnosis of a disease.

Samuthana Visesha

Samuthana refers to origin. These are the factors which lead to origin of a disease. *Samuthana Visesha* which gives the understanding of causes may be grouped under *Bahya Hetu* (external causes) and *Abhyantara Hetu* (internal causes). *Bahya Hetu* are *Utpadaka Hetu* (causative factors) or *Vyanjaka Hetu* (triggering factor) for a disease. *Abhyantara Hetu* are *Vatadi Dosha*, which can be understood from *Lakshanas* of a *Roga*. Without *Dosha*, there is no *Roga*. The only cause for any disease is described as disequilibrium of

Tridosha[5]. The intensity of *Hetu* is the reason for variation of *Dosha* vitiation in different diseases.

Vikara Prakruti

Vikara Prakruti is the *Vyadhi Swabhava* (nature of disease). It is observed with *Lakshanas* seen in the patient. Clinical features may be vague which are seen as prodromal symptoms or specific symptoms and signs of a particular disease. *Vikara Prakruti* is due to corresponding *Dosha* involved in *Vyadhi*.

Vikara Prakruti refers to *Vyadhi Swabhava* due to *Dosha* involvement or the nature of pathology. *Hemadri* defined it as *Asadharanam Lakshanam* (specific clinical feature) seen in one disease and absent in other disease[6]. *Vikara Prakruti* of any disease is the *Pratyatma Lakshana* (cardinal feature). These *Lakshanas* are produced by *Dosha* involved in a particular disease. *Vikara Prakruti* or the clinical presentations of disease is examined to infer the involved *Dosha* responsible for producing it.

Adhishtana Antharaani

Adhishtana refers to *Sthana* (site). *Ashayantarani* is used as synonym by Chakrapani. *Ashayantarani* refers to *Ashayas* (hollow structures) involved and *Avayavas* (organs) related with the *Vyadhi*. *Sthana* can be both *Rasadi Dhatu* as well as *Bastyadi Avayavas*. *Adhishtanantarani* are the site or location involved in manifestation of a disease. Understanding *Adhishtana* also have major role in proper diagnosis and giving *Sthanika Dosha Chikitsa* (treatment for main *Dosha*).

Rasadi Dhatu and *Bastyadi Ashaya* are the *Dosha Sthana* (abode of *Dosha*). Dosha Sthana like *Pakwashaya* or *Amashaya* which are regarded as *Vyadhi Utbhava Sthana* (site of origin)[7]. are also included in *Adhishtana Antarani*. Other than *Dosha Adhishtana*, it also considers *Sanchara Sthana* (channels of circulation) which are *Anga Pratyangas* (parts) of the body involved in a disease or *Vyaktha Sthana* (site of manifestation) where the *Lakshanas* are seen. Each disease has a main *Adhishtana* where the cardinal part of pathogenesis i.e., *Dosha – Dooshya Sammurcchana* (conglomeration of *Dosha* and *Dooshya*) takes place and leads to manifestation of cardinal signs.

CEREBROVASCULAR ACCIDENT

A stroke, or cerebrovascular accident, is defined as an abrupt onset of a neurologic deficit that is attributable to a focal vascular cause[8]. Stroke is the most common clinical manifestation of cerebrovascular disease and results in episodes of brain dysfunction due to focal ischemia or hemorrhage[9] where neurological deficits must persist for at least 24 hours.

Based on etiology, stroke may be of ischemic or hemorrhagic. Ischemic stroke results when a clot blocks or impairs blood flow, depriving the brain of essential oxygen and nutrients. Hemorrhagic stroke occurs when blood vessels rupture, causing leakage of blood in or around the brain[10].

Several terms have been used to classify strokes, often based on the duration and evolution of symptoms:

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- Transient ischemic attack (TIA) describes a stroke in which symptoms resolve within 24 hours.
- Stroke describes those events in which symptoms last more than 24 hours. The term 'minor stroke' is sometimes used to refer to symptoms lasting over 24 hours but not causing significant disability.
- Progressing stroke (or stroke in evolution) - describes a stroke in which the focal neurological deficit worsens after the patient's initial presentation. It may be due to increasing volume of infarction, hemorrhagic transformation or increasing cerebral oedema.
- Completed stroke – It describes a stroke in which the focal deficit persists and is not progressing.

Based on the affected vascular territory, stroke is classified as that affecting anterior cerebral artery, middle cerebral artery syndrome, posterior cerebral artery syndrome.

Acute stroke is characterised by a rapid-onset, focal deficit of brain function and can be considered as a spectrum of symptoms from transient (TIA) to persistent (stroke).

Infarction may result in weakness and sensory loss in the contralateral leg. Tendon reflexes may be decreased, normal, or increased. Babinski's sign may be present. The sensory modalities most often affected are discriminative (two-point discrimination, localization, stereognosis) and proprioceptive (position sense).

Intracerebral hemorrhage present with the abrupt onset of a focal neurologic deficit. Usually, clinical symptoms manifest maximally at onset, but sometimes deficit worsens over 30–90 minutes of onset. There will be diminishing level of consciousness and signs of increased ICP such as headache and vomiting.

In case of CVA, laboratory investigations help in assessment of risk factors and the condition of vital assessment. Haematological investigations include examination of blood glucose (diabetes mellitus), triglycerides and cholesterol (hyperlipidaemia) or full blood count (polycythaemia). Other imaging techniques are also essential for establishing pathological diagnosis in stroke. CT Scan remain the investigation of choice in acute stroke cases. It helps in rapid identification of intracerebral hemorrhage and stroke mimics such as tumours and helps in differential diagnosis or finding the underlying cause for stroke. Magnetic resonance imaging (MRI) is used in case of stroke when there is diagnostic uncertainty or delayed presentation, and in identification of the extent and location of infarction. It also identifies intracranial hemorrhage and other abnormalities using special sequences. In case of embolic stroke, most common source is from cardiac origin and cardiac evaluation of all stroke patients are essential to rule out embolism.

DISCUSSION

1. Samuthana Visesha of CVA

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Acharya Susruta classified diseases into seven categories based on etiology. Etiology of CVA can be also understood under this classification of diseases. The *Samuthana Visesha* of CVA falls under following seven categories -

❖ **Aadibala Pravrutta (hereditary defects)**

Acharya Charaka has described the pathogenesis of *Sahaja Vyadhi* (genetic disease) are – *Poorvajanmakurta Karma* (wrong deeds of previous life) and *Matapitru Apachara* (wrong deeds of parents) which causes *Bija Dosha* (genetic defects)[11]. Severity on manifestation depends on strength of *Poorvajanmakruta Karma*. If *Poorvajanmakruta Karma* is weak, but there is *Matapitru Beeja Dushti* it produces *Vyadhi*. If *Poorvajanmakruta Karma* is strong, without *Matapitru Beeja Dushti* also, it produces *Aadibala Pravrutta Vyadhi*.

Familial trend of occurrence of CVA was noted as early as 7th century. Genetic factors play different role in manifestation of disease[12]. Some genetic factors influence risk for development of stroke. For example, Histone Deacetylase (HDAC9). Genetic factors directly alter severity of disease, alter susceptibility to key risk factors like hypertension and dyslipidemia. Genetic factors influence response to risk factor, environmental exposure and even stroke recovery. Understanding of genetic contributions of stroke helps in targeted approach in treatment and prevention.

❖ **Janmabala Pravrutta (congenital defects)**

Congenital diseases occur due to unwholesome behaviour of mother. It may be of *Rasakrta* (nutritional causes), or *Douhrda Apacharakrta* (nonfulfillment of cravings)[13]. Among the *Garbha Upaghatakara Bhavas* (factors that causes fetal loss), *Acharya* explains that if a pregnant lady follows the *Nidanas* described for different diseases mentioned, the progeny will suffer from the diseases caused due to those *Nidanas*[14].

Some problems like pre-eclampsia, premature rupture of membranes, diabetes, infections, placenta problems that affect mother during pregnancy can cause a baby to have an ischemic stroke before or after birth.

❖ **Doshabala Pravrutta (acquired causes)**

These are the diseases caused by the irregular increase and decrease of *Doshas* resulting from consuming foods which are unsuitable to one's health and faulty behavior. These are of two types- arising from *Amashaya* and *Pakwashaya*. *Shirorogas* can be considered as *Ama-Pakwashayotha* (arising from both sites) and *Vata Pradhana Tridoshaja*, since all *Doshas* are involved in *Samprapti* (pathogenesis)[15].

All those acquired causes of CVA due to lifestyle, food, which may provoke *Doshas* cause *Doshabala Pravrutta Vyadhi*. Main event in stroke pathogenesis atherosclerosis. Various risk factors like smoking, alcoholism, sedentary lifestyle, dyslipidemia, plaque formation by endothelial injury due to hypertension, contributes greatly to causing atherosclerosis leading to stroke.

❖ **Sanghatabala Pravrutta (exogenous causes)**

These are the diseases resulting from traumatic and exogenous causes. These are of two types-

caused by instruments and due to fierce animals. This classification was based on life at earlier times. Now these causes are relatable with road traffic accidents and other traumatic injuries. Head injury or trauma may result in CVA due to intracerebral or subarachnoid hemorrhage due to rupture of blood vessels. Other than trauma, surgery and anesthesia accentuate risk of perioperative stroke. Surgery precipitates systemic inflammation and hypercoagulability and contributes to thrombogenesis and rupture of vessel plaque in the perioperative settings. *Shastrakrta* (due to instruments) may also be considered as use of syringes or needles for intravenous administration of drugs like cocaine may cause enhanced sympathetic activity and sever hypertension leading to subarachnoid hemorrhages.

❖ **Kalabala Pravrutta (environmental/climatic causes)**

Shirorogas caused by fluctuations in the climatic conditions like variation in cold, heat, air, rains, and sunlight. They are classified into caused by abnormal seasons and normal seasons. *Avasyaya* (cold) and *Pragvata* (easterly wind) exposure cause diseases of head. Similarly, *Kala Viparyaya* (altered variations of climate) is also considered as one such *Kalabala Pravrutta Nidana.*

Climatic changes like atmospheric pressure and wind speed affect manifestation of stroke by acting as triggering factors. They cause vaso constriction and rise blood pressure suddenly which initiates the stroke genesis. Thus, weather conditions are thought as triggering factors for stroke.

❖ **Daivabala Pravrutta (supernatural causes[16])**

Daivabala Pravrutta is diseases caused due to strength of *Daiva* (deeds of previous life). *Daiva* word indicates *Poorvajanma Kruta Karma* (deeds of previous life), but it also covers diseases due to deeds of this life is explained in this context.

Two types of *Daivabala Pravrutta Vyadhi* are those caused by thunderbolt or due to causes such as *Krimi* (contagious infectious). *Daivabala Pravruuta Vyadhi* may be due to *Samsargaja* (contact with evil minded persons) or due to *Akasmika* (accidental causes). *Akasmika* or accidental causes are due to without an identifiable cause or contact a disease manifested due to *Poorvajanmakruta Karma* Bala.CVA patients in whom cause cannot be traced by interrogation or examination or lab investigations fall into *Akasmika Daivabala Pravrutta Nidana*. *Krimi* is mentioned as *Shiroroga Nidana*. Ischemia especially in children may be preceded by infections like bacterial meningitis caused by haemophilus influenzae, pneumococci, and streptococci.

❖ **Swabhavabala Pravrutta (natural diseases)**

These diseases are caused due to changes occurring in the body with time. They are hunger, thirst, sleep, senility, death. Such diseases are classified into two groups- with timely and untimely occurrence. Stroke occurs in children, adolescents, young are untimely and usually

hemorrhagic variety. Causes are usually genetic, congenital, metabolic, infectious, and systemic causes[17]. In older adults and geriatric group, ischemic stroke outnumbers hemorrhagic type and most dominant causes are atherosclerosis and atrial fibrillation.

2. Vikara Prakruti of CVA

Any disease pathology can be understood based on some clinical symptoms and signs developed in a patient. All patients may not present with same clinical features. Majority of CVA cases present with loss of strength in half side of body. Based on site of infarct, there can be varied presentations also like aphasia, or speech problems, loss of sensation, visual defects, memory loss and so on. In cases of hemorrhage, most of patients experience symptoms of raised intra cranial pressure.

The term *Shiroroga* encompasses various diseases of the head that involves *Pradooshana* of *Raktha* due to *Kupita Doshas*, resulting in different neurological presentations. The understanding of *Vikara Prakruti* of CVA is explained based on the clinical features seen in patients. They are

❖ **Motor weakness of limbs**

The word weakness is commonly used for paralysis. Paralysis is the complete loss of muscle strength. It is denoted by the word plegia. Paresis means loss of strength, but not complete paralysis. Hemiplegia or hemi paresis is paralysis or paresis in one side of the body.

Cheshta Nivrutti (motor weakness[18]) in one *Paksha* (side) of the body is the cardinal feature of *Pakshaghata*. Dalhana comments *Karmanyata* as *Ishat Karmanyata* (partial loss or hemiparesis). In *Ardita, Cheshta Nivruti* may also involve half of the face and it may be transient or episodic in nature. Any movement or *Cheshta* is the function of *Vata* especially *Vyana Vata.*

❖ **Altered consciousness**

The level of consciousness or the degree of wakefulness is controlled by the ascending reticular activating system (ARAS).Full consciousness is characterized by wakefulness, focused attention, and normal cognitive function. When consciousness is impaired, patient become stuporous, semi coma or coma. *Achetana* (impaired consciousness) or *Alpa chetana* is described in *Lakshana* of *Pakshaghata* which also gives grading of deterioration of consciousness.

❖ **Impaired orientation**

Another important higher mental function is the clear understanding of surroundings. It is assessed through the orientation to time, person, and place. When there is impaired orientation patient goes to delirious state. Delirium is defined as decrease in the level of consciousness accompanied by attention disorders, failure to recognize one's surroundings.

Here *Dhruti Karma* (differentiating capacity) is affected. *Udana Vata* is prime cause for higher mental functions which when affected causes impairment of orientation. *Budhi Moha* (confusional state) is also attributed by *Dushta RaktaVyadhi*[19] (disease due to vitiated blood). Due to aggravated *Vata Dosha*, if a person is delivering incoherent and useless talk, that state is known as *Pralapa*[20] (delirium).

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❖ **Memory impairment**

Memory is a person's ability to recollect. Memory impairment is often seen in infarct of PCA territory, infarctions of thalamus. *Smruti Moha* (memory impairment) is a *Lakshana* described in *Ardita*[21]. Smriti is controlled mainly by *Udana Vata*. So, in CVA, there is of *Udana Vata Kopa* that leads to *Smruti Moha*.

❖ **Speech defects**

Speech defects seen in CVA patients are aphasia (complete loss of speech), dysarthria (speaks with difficulty). Impaired speech can be caused by impaired motor function (central or peripheral) or impaired motor control (cerebellar or extrapyramidal).

The defects in speech are explained in different contexts in Ayurveda. *Vaksthambha* is one of main *Lakshanas* seen in *Pakshaghata* which represent different speech pathologies. *Kalaa Sajjati Cha Vak* [22]. is the *Lakshna* seen in *Ardita*. It is understood as *Avyakta Vak* (unclear speech). *Vak Pravrutti* is specifically the function of *Udana Vata* and is considered as initiator of the motor nerve impulses for speech.

❖ **Sensory symptoms – vague pain**

Sensation of touch, pain, temperature, as well as special senses are under nervous control and is affected often in cases of stroke. Lacunar infarct in the ventral thalamus also produces pure sensory stroke. Various types of pain are described in *Pakshaghata.* The involvement of special senses is described in *Lakshanas* of *Ardita*. Knowledge of *Sparsha* (touch) is controlled by both *Vata* and *Pitta* as both are seen in *Sparshanendriya* (sense of touch). Functions of *Indirya* (sense organ) are regulated by *Prana Vata* and understanding of peripheral touch sensation is carried by *Vyana Vata* and Various *Snayu* (peripheral nerve) originating from *Twak* (skin). If the skin cannot perceive the sensation of touch, either heat or cold, soft, or hard that condition is known as *Twak Soonyata*[23]. *Vyana Vata, Pitta Dushti* is present in *Pakshaghata* which produces sensory symptoms.

❖ **Ardita – fascial paralysis**

Ardita is the term given specifically to the disease which afflicts half side of face or half side of the body including the face. According to Bhava Prakasha, the Vata Dosha present in the head, nose, lips, chin, forehead, inner canthus, and outer canthus gets vitiated and makes half of the face crooked and that part is paralysed. Sometimes, the neck is also involved. As a result, the head trembles, speech blurs and eyes, nose, neck, chin, and teeth may also become crooked. There may be painful sensation in that area. This disease is known as *Ardita.* The root meaning of *Ardita* is to curve.

The term *Ardita* is clinical diagnosis. It is understood with *Vyadhi Prathiniyatha Lakshanam* (cardinal feature). Among all the *Shirorogas, Ardita* was the *Pratyatma Lakshana* according to manifestations of CVA. *Ardita* is explained as *Vegavat* (episodic nature). It includes the definition of TIA as it is episodic and temporary vascular occlusion. In *Ardita,* there is involvement of half of body as well as half of face is described. It includes hemiplegia as well as involvement of bells phenomenon. Various features of cranial

nerve injury and sensory symptoms are included under *Ardita Samanya Lakshana* (clinical features).

❖ **Moorccha**

When a weak individual's *Samjnavaha Nadis* (channels) are blocked by *Vatadi Doshas*, one is occupied by *Tamodosha* which makes the person devoid of discrimination of pleasure and agony and ultimately fall like a log of wood. This condition is called *Moorccha*[24]. Syncope is a transient, self-limited loss of consciousness due to acute global impairment of cerebral blood flow. The onset is rapid, duration brief, and recovery spontaneous and complete. The pre-syncopal symptoms include dizziness, light headedness or faintness, weakness, fatigue, and visual and auditory disturbances.

3. Adhishtana Antharani of CVA

Roga Marga

Shiras is one among *Trimarma* (vital point) and any disease affecting *Marma* such as *Ardita&Pakshaghata* are included under *Madhyama Roga Marga*[25].

Manovaha Srotas

The term *Manovaha Srotas* (channels connecting to mind) signifies the area of flow of mental activities. Among the classification of *Srotas*, *Manovaha Srotas* is not included but in various other contexts of diseases, *Manovaha Srotas* is described.

Among the *Doshaja Abhighata Lakshanas* of *Shiro Marma* by Acharya Charaka, there is manifestation of *Chesta Naasha* (loss of movements)and *Samjna Naasha*[26] (loss of sensation). In a stroke patient, there will be loss of altered level of consciousness, loss of movement or loss of sensation.

With these considerations, *Manovaha Srotas* can be considered as the channels connecting *Dhatus* to *Shiras. Manovaha Srotas* functions can be classified into *Samjnavaha Srotas* and *Cheshtavaha Srotas*. *Manas* perform the functions of *Samjna*, which can be understood as *Nama Grahana* (recognition)- a person able to recognise and understand with his consciousness as well as *Agnyadi Daha Bodhana* (peripheral sensation of touch). In the context of *Moorcha* (unconsciousness), *Acharya Susruta* mentioned involvement of *Bahya Abhyantara Karana* which leads to *Samjna Nasha* and *Bala Nasha*[27]. Both altered sensorium and loss of strength are seen in very severe acute CVA cases. Hence, *Chestavaha* and *Samjnavaha* are 2 aspects of *Manovaha Srotas*.

Rakta Vaha Srotas

Rakta is the main *Dhatu* involved in *Shiroroga Samprapti*. *Raktavaha Srotas* have its origin in *Yakrut* (liver) and *Pleeha* (spleen). *Susrutacharya* have added *Raktavahi Dhamani* (channels of circulation) also[28]. Here *Dhamani* holds good about the vascular system in the body. *Srotas* can be understood as *Sthanastha* (sites) as well as *Margaga Srotas* (channels). Diseases affecting *Raktavaha Srotas* such as *Mada*, *Moorcha* and *Sanyasa* are seen as acute complications in severe cases of CVA.

The type of *Sroto Dushti* (pathology) involved is *Margavarana* (obstruction) in case of infarct and

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Ati Pravrutti (excess)of *Rakta* in hemorrhagic CVA.

Udbhava Sthana

Udbhava means origin. The nidus where a disease originates is considered as its *Udbhava Sthana*. Considering *Lakshana Samprapti* (clinical diagnosis) of CVA, *Vata Dosha* plays a major role in causation of these conditions. If the risk factors of CVA, which plays main role in manifestation of the disease are considered like Diabetes mellitus, Hypertension, these are *Kapha* and *Pitta Dosha Pradhana* conditions. CVA can be considered originating from both *Amashaya* and *Pakwashaya*. *Pakwashaya* remains the main *Sthana* for disease, while *Amashaya* also plays role of *Udbhava Sthana* in development of risk factors.

Sanchara Sthana

Sanchara Sthana refers to locations in the body where the *Dosha* gets carried to from *Uthbhava Sthana* or the places where *Dushta Doshas* get lodged in the course of illness. These channels can be *Dosha Vaha Sira* and *Dhamani*. These represent the channels of circulation in the body where there is movement of *Dosha*. The description in *Sira* where the movement of *Doshas* together with *Rakta* takes place substantiates the *Sanchara or doshas* in these *Marga* in *PrasaraAvastha* (stage when *doshas* circulate in whole body) These *Dhamani*, *Sira*, *Snayu* which anatomically and functionally resemble with nervous system are involved as *SancharaSthana* in CVA after the *Vyadhi Utpatti* (origin of disease). Analysing *Samprapti* of *Pakshaghata* and *Ardita*, there is difference in the mentioning of *dooshyas*, i.e., *Dhamani* by *Susruta Acharya* and *Sira, Snayu* by *Acharya Charaka*. Etiologically Stroke may be Infarct or Hemorrhagic. Hemorrhagic CVA with sensory deficits and speech problems involves *Dhamani* as *Sanchara Sthana* due to affection of functions of *Dhamani*. In the cases of CVA infarcts, there is predominantly motor deficits and the *Sanchara Sthana* is *Sira* and *Snayu*, which are similar to peripheral nerves that carry motor signals.

Adhishthana

Shiras is considered as the *Adhishtana* in CVA. All the *Doshas* from their respective *Utbhava Sthana* undergo *Prakopa* (vitiation) and starts moving in the *Sira* during *Prasara Avastha* reaches *Shiras* and vitiates *Rakta Dhatu*. Here the *Sthana Samshraya* occurs in *Shiras* with *Tridosha and Rakta* which leads to *Majja Dhatu Dushti*. Disturbance in the higher brain functions, like consciousness, memory, intelligence, etc. is encountered in *Pakshaghata* and they are due to impairment in the functions of *Mana*. Based on the *Sthana* of *Manas*, it can be substantiated to that of *Mastaka Majja* (brain) located in *Shiras.*

Vyaktha Sthana

Vyatka Sthana is the site of body where clinical features are seen. It is the location *of Vyakta Lakshana*. The word *Pakshaghata* refers to injury to one *Paksha*. *Vyaktha Sthana* in *Pakshaghata* is *Vama* or *Dakshina Paksha* (left or right side of the body). The classical references on *Ardita* and *Pakshaghata* describes *Vyaktha Sthana* as *Eka Paksha* (one side of the body), *Mukhardha* (half of face), *Ardha kaya* (half of body), *Ardha Shareera*

and *Ardha Mukha* (both half of body and face), *Sarva Shareera*[29](whole body).

CONCLUSION

The concepts of *Trividha Bodhya Sangraha* constitutes understanding a disease using three heading of *Samuthana Visesha, Vikara Prakruti and Adhishtana Antharani. Samuthana Visesha* consists of *Sapta Vidha* Classification of disease based on etiology of CVA. In *Shiroroga Samprapti*, *Rakta Dhatu Dushti* in *Shiras* explains both ischemic and hemorrhagic pathology of CVA. *Rakta Dushti* resulting from *Rakta Kshaya* due to *Ati Rakta Shruti* as in hypertensive bleeds or due to *Apravrutti* of *Rakta* and *Upasoshana* of *Mastulunga Majja* distal to *Margavarana* in *Rasa Rakta Marga*.

When CVA was analysed with etiopathogenesis of *Shiroroga, Pratyatma Lakshana* of *Ardita*is the clinical manifestation. *Vikara Prakruti* shows *Vata Pradhana Tridosha Dushti* in *Shiroroga.* In *Pakshaghata* and *Arditadi Shiroroga*, there is *Udana Vata Kopa* which impairs its function and produces *Moha* of *Budhi, Smruti, Achetanatwa*, and *Vak Sthambha* or *Alpa Vak*.

The literary analysis of etiology, clinical features and *Samprapti* of *Shiroroga* widens the understanding of CVA in terms of onset, pathology and clinical manifestations.

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