CRITICAL ANALYSIS OF ETIOLOGY OF PAKSHAGHATA (STROKE)

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ABSTRACT:

Nidana (etiology) is defined as the factors, which cause the disease. Treatment becomes easier by knowing the causative factors of a disease. In this light, it has been clearly stated that ‘Nidana Parivarjanam’ is one type of Chikitsa. With the review of Ayurvedic literature it is evident that no specific aetiological factor has been described separately for Pakshaghata. Disorders of Vata, including Pakshaghata have been classified as Nanatmaja Vata Vyadhi, so all the factors vitiating Vata in the body are likely to be the root cause of Pakshaghata. Hence, the general causative factors of Vata Vyadhi or factors vitiating Vata Dosha in the body may be regarded as the aetiological factors of Pakshaghata as well. In this article etiological factors for Pakshaghata (Stroke) are analysed.

Key Words: Pakshaghata, Stroke, Vata Dosha.

INTRODUCTION:

Causative factors remain same in all Vata Vyadhi, different forms appear like Pakshaghata, Gridhrasi etc. This is because of the Samprapti Vishesha of vitiated Vata.

The Nidana of Vata Vyadhi and Vata Prakopa given in Ayurvedic texts may be classified in following headings,

According to Traits of Vata¹:

Following traits of Vata are mentioned in different Ayurvedic text. Factors similar to these traits cause Vata Prakopa.

Ruksha (ununctuous), Shita (cold), Laghu (light), Katu (bitter), Tikta (Pungent), Kashaya (Astringent), Daruna (Harsh), Khara (Rough), Vishada (Cleanness)

Aaharaja Nidana (Dietary factors): [2],[3],[4],[5],[6]

Alpa/Pramitanna (less amount of food), Laghu Anna (light food), Langhana (keep fasting), Abhojana/Anashana (No intake of food), Vishamashana (improper intake of food), Adhyshana (intake of food before digestion of previously taken food), Vishtambhi (intake of food that binds the bowels), Shushka Shaka (dry vegetables), Vallura (Shushka Mamsa) (Dry meat), Jaramatigateashite (Intake of food during indigestion).

Viharaja Nidana (Life style factors): [2],[3],[4],[5],[6]

AtiVVayava (Excessive sexual intercourse), AtiPrajaagarana (Excessive awakening in night), Langhana (Activities for lightness in body), Plavana (Hopping), Prataran (Swimming), AtiAdhya (Excessive walking), AtiVVayama (Excessive exercise), AtiVicheshta (Excessive abnormal activities), Dukha-shaiya (sleeping in uncomfortable postures), Dukha-asana (Sitting in uncomfortable postures), Divaswapna (Day sleep), Atiadhivayana (Reading for long time), Pradhavana (Running for long time), Bhariharana (Carrying heavy loads), Vegasanadhana (suppression of natural urges), UchchaBhashana (Loud speech), Gaja-aticharya (Riding on the elephant), Turang-aticharya (Riding on horse), Ratha-aticharya (Riding on vehicle), Pada-aticharya (excessive walking), Yaan (excessive riding on vehicle), AtiShrama (excessive physical work), Gadhochchhadana (Covering with heavy cloth), Trushitasana (Taking food while thirsty), Kshudhitambupana (Drinking water when hungry).

Aagantuwa Nidana (Traumatic Factors): [2],[3],[4],[5],[6]

Abhighata (Trauma), Marmaghata (Injury to Vital parts), BalVadVigahra (Contesting with strong persons), Prapatana-Gaj, Ushtra, Ashva, Yaana, Taru (Tree) / AticuschaPatanam (Falling down from elephant, camel, horse, vehicle, tree/ Falling from height), Prapidana/ Praharo/ (Dandaadi) (Attack by wooden instruments), Danyagovaijaganigrhara (Restraining untamed animals such as bull, horse, elephant), Ashama/Shariloha/Kashtha- Utkshepa, Vikshepa, Bhramana, Chalana (Throwing heavy stone, boulders, metal, wooden log)

Manasika Nidana (Psychic Factors): [2],[3],[4],[5],[6]

Chinta (Stress), Shoka (Grief), Krodha (Angry), Bhaya

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(Fear), Kama (Sexual desire), Vegavidharanodeerana (Suppression/premature initiation of natural urges of the body), Utkantha (Emotions)

**Kalaja Nidana** (seasonal, diurnal, digestion-time based):[3],[4],[5],[6]

Pravata (Exposure to wind), Grishmane (at the end of summer season), Jeernante (at the end of digestion), Ahoratriante (at the end of night), Shishir Ritu (At the end of winter season), Varsha Ritu (Rainy season), Bhukta Ante (At the end of food intake), Shita Kala (Winter season), Prabhata Kala (early morning), Aparahana (After noon), Hima (Cold), Pragvata (Exposure to the wind of north direction).

**Nidanarthkara diseases (caused due to other diseases)**

Dhatu Kshaya[2] (Diminution in nutritional element of body), Rogati Karshanam[2](excessive emaciation due to diseases), Ama[2] (Toxic substance), Gadakритatimamsakshaya[6](wastage of muscular mass due to disease), Margasyaavararana[7] (Obstruction in the path)

**Vaidyakrita (iatrogenic):**[2]

Vishama Upachara (Improper treatment), AtiDoshaSravana (excessive loss of body fluids), AtiAsrik (excessive blood letting), Kriyatiyoga / Vamana Virechana Atiyoga (excessive use of treatment procedure).

**Stroke**[8]

Types: There are two kind of stroke:

1. **Ischemic Stroke:** It is caused by a blood clot that blocks or plugs a blood vessel in the brain.
2. **Hemorrhagic Stroke:** It is caused by a blood vessel that breaks and bleeds into the brain. There is one more kind called “mini-strokes” or “Transient ischemic attacks (TIAs)” It occurs when the blood supply to the brain is briefly interrupted.

**Causes of Ischemic Stroke:**

- Atherosclerosis
- Thrombosis
- Embolism
- Atrial fibrillation
- Heart attack
- Abnormalities of the heart valves

Other possible causes include use of street drugs, traumatic injury to the blood vessels of the neck or disorders of blood clotting.

**Causes of Haemorrhagic Stroke**

The most common cause of cerebral hemorrhage is hypertension. Less common causes of intracerebral hemorrhage include trauma, infections, tumors, blood clotting deficiencies and abnormalities in blood vessels. Intracerebral hemorrhage occurs at all ages. It is less common than ischemic strokes.

**Risk factors for stroke:**

a. **Risk factor for Ischaemic stroke**

Non-modifiable risk factors - include the following: age, race, sex, ethnicity, history of migraine headaches, fibromuscular dysplasia, heredity: family history of stroke or transient ischemic attacks.

Modifiable risk factors - hypertension (the most important), diabetes mellitus, cardiac disease, hypercholesterolemia, carotid stenosis, lifestyle issues (excessive alcohol intake, tobacco use, illicit drug use, physical inactivity), obesity, oral contraceptive use/postmenopausal hormone use.

b. **Risk factors for Haemorrhagic stroke** - Advanced age, hypertension (up to 60% of cases), previous history of stroke, alcohol abuse, use of illicit drugs (coca, other sympathomimetic drugs)

**Critical analysis of Nidana in relation to Pakshaghata**

According to traits of Vata

According to the principles of Ayurveda, Samanya is the cause of increase and Vishesha is the cause of decrease of all things at all time. Hence excess intake of the above Gunayukta Ahara causes Rukshata, Laghuta, Shitalta, Brahma, Kharata in the body and when body gets affected by these traits, Vayu makes its place in the body and eventually it becomes aggravated . Vata Vyashti are compared to the diseases of nervous system. The nerve cells are covered by myelin sheath, which is chiefly made up of fat. It gives nourishment to the nerve fibres. This fat can be taken as Snigdha substance. By excess intake of Ruksha Guna Ahara, the nourishing material of nerve will be decreased and this will cause Dhatu kshaya, which in turn leads to Vata Pakshaghata and Pakshadhata. Excess intake of Ahara having Katu, Tikta and Kashaya rasa causes vitiation of Vata. Excessive ingestion of Katu rasa causes Bala Kshaya, Bhrama and on account of having Vayu and Agni Mahabhuta in preponderance, it generates various kinds of Vata disorders in the legs, arms, sides and back along with giddiness, pain etc. Pakshaghata also leg, arm and sometimes face of one side of the body is affected by Vata. Tikta rasa when taken in excess causes Shosha of Rasa, Rakta, Mamsa, Meda, Asthi and Majjadhata and produces many Vata disorders by virtue of Ruksha, Kharra and Vishada Guna. Kashaya rasa is Kharra, Vishada and Ruksha. Its Atiyoga causes various Vata disorders like Pakshavadha, Ardita, etc.
**Aaharaja Nidana (Dietary factors)**

Anashana or Alpashana reduces Bala, Varna, Upachaya, Veerya; impairs eight Sara, Sharira, Mana, Buddh, Indriyas and is cause of eighty types of Vata Vyadhi. Atimatra Bhojana leads to vitiation of all three Doshas. These Doshas reside in the Kukshi and produce various disorders. Amongst them, vitiated Vata produces Shira Sankuchana, Stambha etc. Abhojana, Ajeerna Bhojana, Atibhojana, Vishamashana leads to Agnimandya. This impairs the production of Rasa Dhatu and thus results in Kshaya of subsequently produced Dhatus. This Dhatukshaya causes VataPrakopa. Ama is produced by Ajeernashana and Adhyashana. This Ama Dosha obstructs the path of Vayu (Margaavarana), which results in vitiation of Vata. Kordusha, Shyamaka, Nivara, etc., being Kudhanya Varga Dravyas, vitiates Vata by their Rukska Guna and Katu Vipaka. Vaidal Varga Dravyas like Mudga, Masura, Makushtha, Chanaka, Kalaya etc. vitiates Vata by their Kashaya Rasa, Katu Vipaka and Shita Guna.

The excessive intake of nutrient-dense forms of foods has become compelling, and the population has difficulty in following low-calorie diet to promote weight loss over time. Sugar-sweetened beverages are contributors to add sugar intake and weight gain and can lead to increased risk of stroke. Currently, increased risk of stroke mortality is associated not only with high intake of carbohydrate, but also with the dietary glycemic index (GI) and glycemic load (GL). A recent study suggests that the risk of mortality from ischemic stroke is increased with increased level of the dietary GI among women[9]. A positive trend is also suggested between dietary GI and mortality from hemorrhagic stroke among women[10],[11]. A meta-analysis study provides high-level evidence that diets with a high GI, high GL, or both, independently of known confounders, including fiber intake, increase the risk of chronic lifestyle-related diseases. Overall, GI had a more powerful effect than did the GL, with more positive associations between GI and chronic disease risk.[12],[13]

**Viharaja Nidana (Life style factors)**

Excessive sexual indulgence makes the body Ruksha causing Vata Prakopa. Ativyayava causes Shukra Dhatu Kshaya and this leads to Kshaya of all Dhatus according to the theory of Pratiloma Kshaya. This Dhatu Kshaya results in Vata Prakopa. Acharya Charaka mentions Balanasha, Ekanga and Sarvanga Roga, Manovasada, etc. Doshas due to Ativyayava and indirectly points towards Pakshaghata. Atijagarana / Ratrijagarana increases the Rukska Guna in the body and there by vitiates Vata. Divasvapna causes Aruchi, Avipaka, Agninasra, etc. This leads to Ama production and results in Avaranjanya Vata Prakopa. Ativyayama causes Dhatukshaya and this leads to vitiation of Vata.

Suppression of natural urges produces the symptoms of excitation of Vata by vitiating it for example, suppressing the urge of Apana Vayu cause many Vatajanya diseases.

Obesity, smoking, alcohol consumption, diet, and physical inactivity were each identified as modifiable lifestyle risk factors for stroke. About 38% of stroke cases were estimated as preventable through adherence to a healthy lifestyle profile (never smoking, maintaining optimal body mass index and waist circumference, performing physical exercise, consuming a moderate quantity of alcohol, and following a healthy dietary pattern).

**Aagantuja Nidana (traumatic factors)**

Acharya Chakrapani says that Abhigahata can be of two types – Doshabhighata and Marmabhighata. Head is considered as a vital part (mana), the seat of indiira and Prana. Shiroorma-ghata causes diseases like Ardita, Manyastambha, Mukatva, Cheshta-Nasha, etc., which are seen in Pakshaghata. Injury to Lohitakshamarma causes loss of blood and leads to Pakshaghata. Injury to Kakshadhararmarma also causes Pakshaghata. Abhigahata, Balvad Vighraha, Prapatana, Prapidana, etc. cause Achaya Purvaka Vata Prakopa.

Injuries to the head or neck may damage the cerebrovascular system and cause a small number of strokes. Head injury or traumatic brain injury may cause bleeding within the brain leading to damage akin to that caused by a hemorrhagic stroke. Neck injury, when associated with spontaneous tearing of the vertebral or carotid arteries caused by sudden and severe extension of the neck, neck rotation, or pressure on the artery, is a contributing cause of stroke, especially in young adults.

**Manasika Nidana (Psychic factors)**

Emotional stress of mind, i.e., Kama, Krodha, Bhaya, Chinta, etc., are likely to trigger the psycho-physiological mechanism liberating neurohumours and hormones in the body which may have direct relation with the excitation of Vata and production of several psychosomatic disorders. Vata is predominant in Rajo Guna. Psychic causes, which are predominant of Rajo Guna, will vitiate Vata and in turn cause Vata Vyadhi. Mana is Udbhendra. Both the sensory and motor functions are governed by Mana. Abnormality in Mana causes disturbance in sensory and motor function causing Pakshaghata. In a person suffering from Chinta, Shoka, etc., the Matra Yuktha Pathya Ahara is also not digested properly leading to Ama formation and Agnimandya. This can lead to Margavarodhajanya Pakshaghata.

**Kalaja Nidana** (seasonal, diurnal, digestion-time based)
The cyclic effect of season, time, day-night, temperature produce a rhythmic effect on human body. The Doshas of the body are also affected. Grishma, Varsha, Shishira seasons; Bhukttante, Jeernante, end of day and night are the kala for vitiation of Vata.

Onset of stroke symptoms has a circadian variation, with a higher risk in the early morning hours (6 AM to noon), and lower risk during the night time period (midnight to 6AM). Approximately 1 of every 8 strokes (1 of 7 ischemic strokes, 1 of 10 hemorrhagic strokes, and 1 of 8 transient ischemic attacks) is attributable to the morning excess[14].

**Nidanarthkara diseases (caused due to other diseases)**

Disease, which acts as the causative factor for other disease is known as Nidanarthakara Roga. Dhatuskhaya, Ama, Rogatikarshana, etc., comes under this category because they vitiate Vata and causes various Vata disorders. Ama causes Margavaranajanya Vata Prakopa. Ama when combines with Vata (Vata samshritsha Ama) leads to many Vata Vyadhis.

Hypercoagulable disorders, fibromuscular dysplasia, vasculitis, arteriovenous malformation, cavernous angioma etc. can cause stroke.

**Vaidyakrita (iatrogenic)**

Vitiation of Vata due to improper management may be treated as a complication of therapies. Excessive use of Panchakarma, Rakta Mokshana, etc. causes excessive loss of body elements, which leads to Riktata of Srotasa and in turn provokes Vata.

Risk factors of iatrogenic disease in the elderly are drug-induced iatrogenic disease, multiple chronic diseases, multiple physicians, hospitalization, and medical or surgical procedures. Iatrogenic disease can have a great psychomotor impact and important social consequences[15].

**DISCUSSION AND CONCLUSION:**

Finally it can be concluded that aetiological factors and risk factors for stroke, as described in Ayurvedic literature are more or less similar to the modern description. In Ayurveda psychological factors are also described because in Ayurveda it is said body and mind association is important for healthy life. When mental factors are dominant then abnormal changes in the body occur, leading to various diseases.

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