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Review

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: *Pakshghata*, 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 *Vata*[1]:

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 (*Cleaniness)

***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 bowel), *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]

AtiVyavaya (Excessive sexual intercourse), *AtiPrajagarana* (Excessive awakening in night), *Langhana* (Activities for lightness in body), *Plavana* (Hopping), *Pratarana* (Swimming), *AtiAdhva* (Excessive walking), *AtiVyayama* (Excessive exercise), *AtiVicheshta* (Excessive abnormal activities), *Dukha-shaiya* (sleeping in uncomfortable postures), *Dukha-asana* (Sitting in uncomfortable postures), *Divaswapna* (Day sleep), *Atiadhyayana* (Reading for long time), *Pradhavana* (Running for long time), *Bharaharana* (Carrying heavy loads), *Vegasandharana* (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).

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

Abhighata (Trauma), *Marmaghata* (Injury to Vital parts), *BalvadVigraha* (Contesting with strong persons, *Prapatana-Gaj, Ushtra, Ashva, Yaana, Taru* (Tree) / *AtiucchaPatanam* (Falling down from elephant, camel, horse, vehicle, tree/ Falling from height), *Prapidana/ Prahara/ (Dandaadi)* (Attack by wooden instruments), *Damyagovajigajanigraha* (Restraining untamed animals such as bull, horse, elephant), *Ashma/Shilaloha/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), *Grishmante* (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), *Gadakritaatimamsakshaya*[6](wastage of muscular mass due to disease), *Margasyaavarana*[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. Ii 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 (cocaine, 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, Darunata, 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 Vyadhi* 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 Prakopa* and *Pakshaghata.* 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 Mahabbuta* 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 *Majjadhatu* and produces many *Vata* disorders by virtue of *Ruksha, Khara* and *Vishada Guna*. ***Kashaya***

rasa is *Khara, 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;* impaires eight *Sara, Sharira, Mana, Buddhi, 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 *VataProkopa. 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 *Ruksha 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 GL 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. Ativyavaya* 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 *Ativyavaya* and indirectly points towards *Pakshaghata. Atijagarana / Ratrijagarana* increases the *Ruksha Guna* in the body and there by vitiates *Vata*. *Divasvapna* causes *Aruchi, Avipaka, Agninasha*, etc. This leads to *Ama* production and results in *Avaranjanya Vata Prokopa*. *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 *Abhighata* can be of two types – *Doshabhighata* and *Marmabighata.* Head is considered as a vital part (*mana*), the seat of *Indirya* and *Prana*. ***Shiromarma-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 ***Kakshadharamarma*** also causes *Pakshaghata*. *Abhighata, Balvad Vigraha, 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 *Ubhayendria.* 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 Yukta 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; *Bhuktante, 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 *Nindanarthakara 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 samshrishta 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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