



Review Article

THE APPLICATION OF NASYA IN PAKSHAGHATA

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ABSTRACT

Pakshaghata is among the eighty *Nanatmaja vikaras* explained by Acharya Charaka in *Sutrasthana, Maharoga adhyaya*. The major *Lakshanas* include *Chesta nivruithi* of *Ardhanga, rujam* and *Vaksthambha*. Even though it is generally mentioned under *Kevala vata vyadhi*, Acharya Susrutha has mentioned its subtypes as *Kaphanubandhi* and *Pittanubandhi*. According to Ayurveda, the disease affects the *Madhyama roga marga* and causes the *Soshana* of *Sira* and *Snayu*. From this, it can be inferred that *Raktha dhathu* is also involved in the pathogenesis of the disease. Specific *Nidanas* of *Pakshaghata* have not been mentioned, therefore general factors causing *Vata prakopa* can be considered. Some consider *Ardhita* as synonym of *Pakshaghata*, then *Ardhita nidana* becomes applicable. Ultimately it occurs due to *Dhathu kshaya* or *Margavarana*. In *Pakshaghata margavarodha* of *Vyana vayu* occurs due to *Nidanas* causing impairment in *Dhathu poshana*, finally leading to *Dhathu kshaya*. In contemporary medicine this condition may be correlated to hemiplegia that occurs after a cerebro vascular accident. It is considered as a disease of difficult prognosis if not managed immediately. But in Ayurveda, the treatment concept is different and has received wide acceptance. The line of treatment according to Acharya Charaka is *Snehana, Swedana* and *Virechana*. This highlights the importance of *Panchakarma chikitsa* in Ayurveda. Even though *Virechana* is the *Shodana* procedure mentioned in *Chikitsa sidhanta*, many of the *Shamana* and *Shodana* therapies mentioned in Ayurveda are found to be effective in managing *Pakshaghata*. This article aims to review the mode of action of *Nasya* in *Pakshaghata*. *Nasya* is one among the *Panchakarma* and is indicated for *Urdwa jatrugata vikaras*. *Nasa* being the *Siraso dwaram*, medicine instilled through nostrils can cure the diseases of the head by spreading through *Sringataka marma*. This is considered as the concept behind the action of *Nasya*.

INTRODUCTION

Ayurveda has explained *Vatavyadhi* as a separate group of disorder. *Vata* being the substratum of the physique contributes to the strength of body. Therefore a mild dysfunction of *Vata* is capable of initiating diseases ranging from *Nakhabheda* to *Sarvanga rogas*^[1]. *Pakshaghata* is one such entity explained among *Vatavyadhi* which needs attention and extraordinary management. Causative factors remains same in all the *Vatavyadhi*'s specified, but the

presentations varies like *Pakshaghata, Arditha, Akshepaka* etc. According to Acharya Charaka *Pakshaghata* is caused due to *Prakupitha vayu* localizing in one half of the body resulting in *Chestanivruithi, Rujam* and *Vaksthamba*^[2]. Acharya Susrutha has considered *Vatavyadhi* as *Maharoga*^[3] and explained its pathology in such a way that the vitiated *Vata dosha* invades *Urdhwa, Adha* and *Tiryak Gata dhamanis*, loosens *Sandhi bandha* and affects one half of the body^[4]. Even though association of *Pitha* and *kapha* is found in *Pakshaghata, Vata* is the chief causative factor. Hence it is essential to understand about the physiological and pathological aspect of *Vata* before initiating any type of management. Another factor that has to be kept in mind is the involvement of *Karmendriyas, Jnanendriyas* and *Manas* in the pathogenesis of the disease. Hence treatment should also focus on the improvement in *Manasika bhavas*.

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The general method of treatment explained in *Vatavyadhi chikitsa* includes *Snehana* and *Swedana* followed by a *Shodhana* according to the condition of the disease. Specifically *Panchakarma chikitsa* has got greater importance in *Vataja vikaras*. This paper aims at analyzing the importance of *Nasya karma* in *Pakshaghata*. *Nasya* which is also known as *Shirovirechana* is a therapeutic measure in which medicine is instilled through the nostrils for the purpose of *Uthamanga shudhi*. It is specifically indicated for *Urdhwajatru vikaras*^[5] for elimination of the *Doshas* through the nearest route. Even though *Pakshaghata* is a *Vataja nanatmaja vikara* affecting *Ardha sareera*, its root being *Siras*, *Nasya karma* have an important action in the management of disease.

In Allopathic system of medicine *Pakshaghata* may be co-related to hemiplegia- a complication of stroke, which is medically known as cerebrovascular accident. CVA is a focal neurologic disorder caused by destruction of brain substance as a result of intracerebral haemorrhage (13% of all CVAs), thrombosis, embolism, or vascular insufficiency (87% of all CVAs) ^[6]. According to the statistics of WHO, 15 million people suffer stroke each year, worldwide^[7]. Of these 5 million dies and another 10 million people are permanently disabled. Allopathic system of medicine believes that the brain tissues once damaged cannot be repaired completely and this can result in a permanent neurological deficit. Hence the prognosis of the disease is said to be difficult. But in Ayurveda *Vatavyadhi* is an area where multifactorial approach can be made to manage the condition even at the progressed stages of disease. This paper is the conceptual analysis of application of *Nasya karma* in *Pakshaghata*.

Methodology

This paper has been prepared by reviewing Ayurveda classical textbooks. Materials related to *Pakshaghata* and *Nasya* have been collected. The major textbooks used in this paper are *Charaka samhitha*, *Susrutha Samhitha*, *Ashtanga Hridaya*, *Sarangadhara samhitha* etc. Medical textbooks and reliable online websites were also referred for collecting relevant informations.

Conceptual Analysis

Mahagada is one of the unique concept present in *Ayurveda* which categorizes certain diseases having poor prognosis or difficult to treat. *Vatavyadhi* is one among the *Ashta mahagadas* unanimously opined by Acharya Charaka, Susrutha and *Vaghbhata* due to its *Bala* and *Mamsa kshaya* as well as development of *Arishta lakshanas*. *Pakshaghata* is one among the *Vatavyadhi* that is caused due to *Margavarana* or *Dhathu kshaya* resulting in *Rujam*, *Vaksthambam* and *Sankocha* of *Hasta*, *Pada* with *Todam* and *Soolam*. Even though it is having difficult prognosis, early detection along with the logical use of internal and external

therapies can help in improving the success rate of the condition.

Thorough knowledge about the condition is also essential before initiating the treatment. For proper understanding of the pathogenesis, this condition can be analyzed based on *Nidanapanchaka* with special focus on:

- *Dhamani, Sira*
- *Agni, Ama* and *Srotas*
- *Nidana panchaka*

Dhamani, Sira

अधोगमाः सतिर्यगा धमनीरूर्ध्वदेहगाः |

यदा प्रकुपितोऽत्यर्थं मातरिश्वा प्रपद्यते | (सु.नि १/६०)

Acharya Susrutha's explanation of *Pakshaghata* begins with the invasion of *Adhogata*, *Urdhwagata* and *Tiryak Gata dhamanis* by *Prakupitha vata*. Therefore *Dhamanis* has got important role in the pathogenesis.

Urdwaga dhamanis are concerned with carrying out functions like *Sabda*, *Sparsha*, *Roopa*, *Rasa*, *Gandha*, *Praswasa*, *Bhashana* and nourishes *Bahu*, *Prishta*, *Greeva* and *Parswa*^[8]. *Adhoga dhamanis* carries out the functions like *Vata*, *Mootra*, *Pureesha*, *Sukra* and *Arthava vahanam* and nourishes *Pakwashaya*, *Guda*, *Vasthi*^[9] etc, while *Tiryag dhamanis* are concerned with *Sweda vahanam*^[10] etc. *Dhamanis* are the structures which are pulsatile in nature and *Siras* are those which performs *Sarana karma*^[11]; in short these may be considered as blood vessels carrying nutrients and oxygen to higher centres, enabling them to perform functions like *Sabda grahana*, *Sparsa grahana*, *Roopa grahana*, *Rasa grahana* and *Gandha grahana*. Acharya Susrutha has also explained that the *Dhamanis* divides, re-divides and subdivides into hundreds and thousands of branches as they proceed and binds the whole body into a closed network. *Sarangadhara samhitha* also supports the fact that veins and arteries attached to heart are widely distributed throughout the body and they constantly nourishes the *Dhathus*. This in a whole supports the fact that a lack of blood supply leads to less oxygen supply resulting in hypoxia in any part of the body. *Prakupita vayu* may be the reason causing *Margavarana* in this condition. If this happens in *Shira*, one among *Trimarma*, it leads to *Pakshaghata*.

Agni, Ama and Srotas

"Agni"- The core concept of Ayurveda is the deciding factor of health and disease. *Mandagni* is considered as the etiological factor behind every disease.

आयुर्वर्णो बलं स्वास्थ्यमुत्साहोपचयौ प्रभा |^[12]

ओजस्तेजोऽग्नयः प्राणाश्चोक्ता देहाग्निहेतुकाः ||

As explained by Acharya Charaka, *Agni* is the reason for the existence of individual. It is not only concerned with the *Ahara pachana* in *Koshta*, but the entire metabolic events including the energy synthesis

is the responsibility of *Agni*. An impaired *Agni* is incapacitated to digest even little quantity of food. In other words, an impairment of *Agni* can cause even the slightest physiological imbalance leading to a cascade of events. Similarly proper regulation of metabolism is crucial for maintaining the brain activity. Considering the concept in the context of CVA, ischemic stroke has a complex pathophysiology which includes perturbations in brain energy metabolic processes which can contribute to worsening of the brain injury and stroke outcome.

Ama, on the other hand is the product of impaired *Agni*. Under the influence of *Agni dushti*, *Ama* is formed as immature *Ahara rasa*. The etiological factors range from dietic indiscretions to emotional factors. Acharya Vagbhata explains the characteristics of *Amavastha* as obstruction of *Srotas*, loss of strength, heaviness, stasis of *Vayu*, laziness, indigestion, spitting, re-tension of excreta, anorexia and exhaustion¹³[13]. This in turn can create an oxidative stress in the body finally leading to cellular death.

Srotas- These are the channels pervading the entire body. The basic function of *Srotas* is the transport of *Rasadi dhathus* for *Poshana karma*. And it is carried out by the initiation of *Vayu*. Any obstruction in the functions of *Vayu* is termed as *Srotorodha*. This kind of obstruction may be observed from the minutest cellular level to the gross *Mahasrotas* level. Blood carries the required amount of oxygen to the tissues. *Vyana vata* is responsible for this movement of *Raktha*. Any obstruction in this flow can result in ischemia. Thus *Srotodushti* is another mechanism in the pathology of *Pakshaghata*.

Nidana panchaka

Nidana

Acharya Charaka has clearly explained that *Dhathu kshaya* and *Margavarana* are the main etiological factors behind *Vatavyadhi*¹⁴[14]. In addition to this *Abhigataja nidana* can also play an important role in the manifestation of *Pakshaghata*. *Dhathu kshaya* mainly manifests in two forms, as explained by Acharya Charaka in *Santarpaneeya adhyaya*. One of them is *Sadhya ksheena* and the other *Chiraksheena*. Similar is the presentation of stroke; CVA is characterized by the acute onset of neurological deficit which requires immediate management¹⁵[15] and on the other hand cerebral atrophy is a degenerative condition of the brain which develops as a gradual process resulting in *Pakshaghata*. The later requires long term management. Among the descriptions of *Vataprakopa nidanas* there are *Aharaja*, *Viharaja* and *Manasika bhavas*. *Ati sravana* of *Doshas* and *Shonita* has also been mentioned as an important *Nidana* causing *Dhathu kshaya*. This may be the reason for the acute onset of symptoms in CVA. As explained earlier *Margavarana* occurs due to the obstruction of *Vyana*

vayu finally leading to *Dhathu kshaya*. According to Acharya Charaka,

वातादयः प्रकृष्यन्ति शिरस्यसं च दुष्यति | ततः शिरसि जायन्ते रोगा विविधलक्षणाः¹⁶[16]

Prakupita vatadi doshas vitiate *Raktha* finally leading to *Sirorogas*. The role of *Raktha* as the fourth *Dosha* in causation of disease is clear from this verse. Haemorrhagic stroke usually presents with the symptoms such as head ache, vomiting, impaired motor functions etc.

Poorvaroopa

अव्यक्तं लक्षणं तेषां पूर्वरूपमिति स्मृतम्¹⁷[17]

Indistinct manifestations of the disease are considered to be the prodromal symptom of *Vatavyadhis* including *Pakshaghata*.

Samprapthi and Roopa

Samanya samprapthi- Due to the general *Aharaja*, *Viharaja* and *Manasika nidanas* two types of pathogenesis are initiated; one resulting from *Margavarana* and the other by *Dhathukshaya avastha*. Both of them results in *Vata prakopa*. In *Dhathu kshaya avastha vata kopa* leads to *Rikthatha* of *Srotas* and in *Margavarana*, *Vata prakopa* results in *Srotorodha* or *Sanga*. These finally lead to the manifestation of symptoms.

Vishista samprapthi- According to Acharya Charaka, various *Nidana* results in *Vata prakopa* and this *Prakupitha vayu* localizes in *Ardha sareeram* and causes *Vishoshana* of *Sira* and *Snayu* resulting in symptoms like *Rujam*, *Vaksthambam* and *Sankocha* of *Hasta* and *Pada*. Acharya Susruta has interpreted this pathology through the invasion of *Urdhva*, *Adha* and *Tiryag gata dhamanis* by *Prakupita vayu*. This in turn can loosen the *Sandhi bandha* leading to *Dakshina* or *Vama paksha haani*. Acharya Vagbhata has combined both the above opinion and formulated *Samprapthi* in such a way that *Prakupita vayu* localizes in half of the body, dries up *Sira*, *Snayu*, loosens *Sandhi bandha* and manifests as *Ardhakaya akarmanyatha* and *Vichetana*.

Chikitsa

Mode of Action of Nasya

स्नेहनं स्नेहसंयुक्तं पक्षाघाते विरेचनम् | (अ. ह.चि २१/४४)

This is the general line of management explained for *Pakshagata*. *Snehana* and *Sneha yuktha Virechana* is advised for treating a *Pakshaghata rogi*. Here *Virechana* can be interpreted in other words as *Siro virechana*, which otherwise known as *Nasya*. Also Acharya Charaka has mentioned that the conditions of *Pakshaghata* and *Ardita* can coexist. Therefore *Navana nasya* mentioned in the treatment of *Ardita* can be administered in *Pakshaghata* also.¹⁸[18]

Nasya karma is one among the *Panchakarma*, which is indicated for *Urdhwajatra gata vikaras*. It is the only procedure meant for *Uthamanga sudhi* in

Ayurveda. In our classics *Sareera* is compared to an upside down tree where the head is the main part or the root and the other body parts are the branches. *Siras* which is also one among the *Trimarmas* controls the entire function of the body. Therefore *Nasya*, a procedure in which medicated *Dravya* is instilled through the nostrils will help in controlling the majority of the diseases of the head. It has many therapeutic modes of administration like *Churna*, *Kalka*, *Swarasa* etc which is chosen according to *Rogi* and *Roga bala*. According to Charaka nose is considered to be the gateway of *Siras*. Therefore the drug administered through the nostrils reaches the *Siras* and expel all the morbid *Doshas* which has been localised there. According to *Ashtanga Sangraha* medicine administered through the nostrils reaches *Sringataka marma* and spreads in *Siras* through *Netra*, *Srotra*, *Kanda* and *Siramukhas* thereby removing the accumulated *Doshas*^[19]. These are some of the opinions of different *Acharyas* regarding the action of *Nasya*. Along with the site of action, the *Oushada kalpana* used, the time of administration of medicine and the type of *Nasya* based on action has got equal importance in the management of disease. Even though different types of *Nasya* have been explained in classics, not all of them are used in current practice of medicine.

Even though direct reference regarding the association of *Pakshaghata* and *Shiras* is not found in *Samhithas*, their relation can be interpreted in different ways. One among the association can be justified in the context of *Dhamanis*. As explained above Acharya Susrutha has mentioned the involvement of *Urdhwaga dhamanis* in which the *Prakupita vayu* localizes. Since it carries out the *karmas* nourishing the *Indriyas*, *Siras* can be considered as the *Sthana* of *Indriyas*. So in the pathology of disease, *Siras* will also be affected. Thus *Pakshaghata* can be considered as an *Indriya pradoshaja vikara* with *Vinasham* and *Vaikalyam* of *Sareera*. In this context *Nasya* becomes the most suitable *Shodana* for *Uthamanga sudhi*.

Manasika vikaras like *Kama*, *Krodha*, *Bhaya* are also likely to trigger the physiological mechanism liberating hormones in the body which may have a direct relation in *Vata prakopa* resulting in psychosomatic diseases. *Vata* is predominant in *Rajo guna*, the psychic causes which are predominant in *Rajo guna* will further vitiate *Vata pitha* and cause *Vatavyadhi*. *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., even proper quantity of food does not digest properly leading to the formation of *Ama*. This can lead to *Margavarodha janya pakshaghata*.

Use of *Nasya* can be justified in this context also. Studies have proven that *Nasya* can act at the level of hypothalamo-pituitary axis thereby having a control over the endocrine secretions. Thus along with *Sareera dosha*, *Manasika doshas* are also being controlled by the action of *Nasya*.

Acharya Susrutha has mainly classified *Nasya* into two types as *Sirovirechana* and *Snehana*^[20]. Further classification of *Nasya* is explained as 5 types, which includes *Nasya*, *Sirovirechana*, *Pratimarsha*, *Avapeedana* and *Pradhamana*. Among these *Avapeedana* and *Pradhamana* is considered as *Vikalpa* of *Sirovirechana*. Both of them have proven action in the management of *Pakshaghata*.

Avapeedananasya

शृतशीतस्वरसादीनां पिचुनाऽवपीडनात् अवपीडः।

Administration of *Nasya* in the above described form is *Avapeedana nasya*. In this procedure *Swarasa*, *Shrita* or *Sheeta kashaya* which is obtained by squeezing the herbs is used for *Nasya karma*. It can act as both *Shodana* and *Shaman nasya*. The drugs are usually of *Teekshna guna* as *Avapeedana nasya* is expected to expel out the *Dushta doshas* by *Shirovirechana*. The instilled medicine shows a local effect on getting into contact to the nearby tissue, systemic effect by getting into vascular system, and effect on CNS by passing via nasal lymphatics, rich nasal blood supply, and nerve like olfactory nerve and trigeminal nerve. The action of medicine through the nerves can be explained by the function of *vasa nervorum*, an irregular source of nutrition that supplies each peripheral nerve from the adjacent blood vessels. These vessels form an extensive microvascular network that maintains the nutrition of all elements within a trunk²¹. This may be helping the transmission of medicine into the nerves and finally into higher centres.

Pradhamana Nasya

चूर्णस्य मुखेन नाड्या वा प्रध्मापनात् प्रधमनम्।

It has been found out that the rheological properties of mucous were found out with the incubation of dry powders into the nasal passage. This hyper osmolarity increases the mucociliary clearance which is in conjunction with the concept of *Sodhana* in Ayurveda.

In the light of above facts mode of action of *Nasya* can be justified in a *Vyadhi* like *Pakshaghata* which has difficult prognostic nature.

DISCUSSION

The mode of action of *Nasya karma* can be explained both in anatomical and physiological point of view.

In general, function of *Vata* may be considered in a system involving nerves. *Vata* pervades through the entire body. Typically in *Pakshaghata*, it causes the

Vishoshana of *Sira* and *Snayu*. Presence of neurological and vascular pathway may be reason behind the action of *Nasya* in *Pakshaghata*.

Neurological pathway begins with the olfactory receptors concentrated in the cribriform plate of ethmoid bone. Therefore the *Dravya* which is instilled through the nose stimulates the receptors and finally reaches the olfactory bulb. In brain the olfactory tract gets divided into two major pathways:

Medial olfactory area: It mainly consists of group of nuclei in midbrain. It also receives the connection from olfactory bulb, hippocampus, amygdala, hypothalamus, thalamus, cingulate gyrus and midbrain.

Lateral olfactory area: It mainly consists of prepyriform and pyriform nucleus.

On analysing the functions of these areas it can be found that the hippocampus is the centre of emotion and long term memory. Amygdala is involved in the sense of smell. It is a part of limbic system responsible for the emotions. Hypothalamus is the connection between the nervous and the endocrine system. Thalamus is the area of consciousness, sleep and sensory interpretation. Cingulate gyrus is concerned with emotions, learning and memory and finally midbrain is the centre of vision, hearing, motor control, sleep wake cycle etc.

In short it can be concluded that the medicine which is instilled through the area of nostril can reach all the areas described above thereby making an impact to the management of disease.

Vascular pathway- kiesselbachs plexus which is the most sensitive area in face lies in the septum and drains into facial vein anteriorly and pterigoid plexus posteriorly. These facial veins have deeper connection with the cavernous sinus and it drains directly into jugular vein. This may be how the *Nasya* acts in systemic circulation. Apart from that in *Pakshaghata* there is *Shoshana* of *Sira* and *Snayu*, therefore *Sneha nasya* which is *Bruhmana* in nature may have more action here. Further studies are required to establish the action of *Nasya* in nourishing the circulatory pathways.

Diffusion of drugs

Lipid soluble substances have the ability to cross through the nasal mucosa. Therefore the *Taila* and *Ghrita* is expected to cross the mucosa thereby stimulating the olfactory nerves. Also paracellular transfer of substance is also possible through the intercellular spaces between the cells, which mean *Swarasa kalpna* may also have an impact on stimulating higher centres.

Another challenge in the action of drug is the blood brain barrier. It is a pathway which is impermeable to passive diffusion. But the medicine which is transferred through the olfactory nerve can

cross the blood brain barrier and enter the brain directly.

On the basis of the above facts it can be justified that the *Nasya karma* has got vital importance in the transport of medicine especially in the diseases involving brain.

CONCLUSION

Thus it can be concluded that *Nasya karma* is explained as one among the *Pachakarma* in our classics that has the ability to manage many diseases with difficult prognosis from a higher level of action. Considering the difficult prognostic nature of *Vatavyadhi nasya karma* along with other internal and external medicines can improve the outcome of treatment to a greater extent.

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