

Ayurveda and Nervous System

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Abstract:- The nervous system is one of the most complicated and sophisticated systems of our body. It helps to regulate, govern and coordinate our body. Nervous system disorders are very severe and possess a great threat to the person's overall well-being and quality of life. Ayurveda has explained them under the term VataVyadhis. VataVyadhis are a group of disorders that arises due to improper functioning of Vata (one of the three doshas of the body) and lead to the symptoms described similar to the nervous system disorders. In this paper, an attempt is made to compile the information available regarding three VataVyadhis- Apsmar (Epilepsy), Pakshaghata (Hemiplegia), and Kampavata (Parkinson's).

Keywords:- Ayurveda, nervous system disorders, vataVyadhi, manovahasrotas, apasmar, epilepsy, pakshaghata, hemiplegia, kampavata, parkinson's, ayurvedic management.

I. INTRODUCTION

The nervous system is the most complex part of our body. It is the command system of our body. It includes both the central nervous system and the peripheral nervous system. The central nervous system is made up of the brain and spinal cord, and the peripheral nervous system is made up of the Somatic and the Autonomic nervous systems.

It is estimated that more than 30 million people suffer from some kind of nervous system disorder. It affects not only the overall health of the patient but also degrades the lifestyle of the patient. Ayurveda has described the Nervous system as manovaha srotas and the nervous system disorders as VataVyadhi.[1][2]

In Ayurvedic science, the Tridosha theory is the foundation root & cause for everything happening in the body and universe. Vata is one of the important dosha, which is the prime driving force for the other two doshas (Pitta and Kapha) Dhatus (Body tissues), and Malas (waste products) from one site to another. Being the controller, activator, leader, and carrier of action, Vata is responsible for all activities of Mana. Out of the five types of Vayu, Prana, Udana, and Vyana have greater influence over the Mana. Vitiation of Vata doshas leads to VataVyadhis. VataVyadhis are included under the Mahagada (an extreme disease) as they have complicated signs and symptoms and are hard to cure.[1][2][3]

II. BRIEF INTRODUCTION OF NERVOUS SYSTEM

The nervous system can be defined as a network of neurons that sends, receives, and modulates neural impulses

between different body parts. It consists of two divisions- the central nervous system and the peripheral nervous system. Central Nervous System consists of the brain and spinal cord while the peripheral Nervous System consists of the spinal and cranial nerves which are further divided into Somatic Nervous System and the Autonomic Nervous system.[4]

A. Cells of Nervous System-

The two basic cells of the Nervous System are- neurons and glial cells. Neurons are the structural and functional unit of the nervous system whereas glial cells are smaller non-excitatory cells that act to support neurons.

Each neuron consists of a body and several processes called neurites. The nerve cell body contains the cellular organelles and is where neural impulses (action potentials) are generated. The processes stem from the body, connect neurons with each other and with other body cells, enabling the flow of neural impulses. There are two types of neural processes that differ in structure and function; Axons- which are long and conduct neural impulses away from the body and Dendrites- short and receive the neural impulses. The myelinated axons make up the white matter while the grey-colored neural bodies and dendrites make up the grey matter. The white matter comprises the innermost part of the brain and the grey matter makes up the outer layer which gets reversed in the spine. [4]

B. Division of the Nervous System

The nervous system comprises the central nervous system and the peripheral nervous system.

The central nervous system AKA CNS consists of the brain and spinal cord which are integration and command centers of the body. The Peripheral nervous system (PNS) consists of the peripheral nerves (cranial nerves, spinal nerves, and autonomic nerves) and ganglia. The PNS is further divided into the somatic nervous system and the autonomic nervous system. The somatic nervous system is the voluntary component of the peripheral nervous system. It consists of all the fibers within cranial and spinal nerves that enable us to perform voluntary body movements and feel sensations from the skin, muscles, and joints. The autonomic nervous system is the involuntary part of the peripheral nervous system. Further divided into the sympathetic autonomic nervous system (SANS) and the parasympathetic autonomic nervous system (PANS). The SANS and PANS are the complete opposite, the former prepares the body for the 'fight or flight' situations whereas the latter adjusts our body for energy conservation. [4]

III. BRIEF INTRODUCTION MANOVAHA SROTAS/MANA

The word “Manah” is derived from “Mana” adding the suffix “Asuna”, with the following meanings-

- Which leads to knowledge
- Which analysis by special knowledge
- Which perceives [2]

The Manas can be defined as the substance which is responsible for the presence or absence of knowledge. It is characterized by *Anutvam* (atomic dimension) and *Ekatvam* (oneness). These are the very basic characters of the mind. If it not so, all kinds of perceptions would have occurred at a time. [5]

इन्द्रियाभिग्रहःकर्ममनसःस्वस्यनिग्रहः ऊहोविचारश्च,
ततःपरंबुद्धिःप्रवर्तते॥२१॥

(Cha.Sha.1/21)

Indriyabhigraha (control of sense organs), *Svasyanigraha* (self-restraint), *Uha* (hypothesis), and *Vichara* (consideration) represent the functions of manas. Perception (cognitive or sensory), stimulation or initiation (conation or motorreflex), discussion, and determination are the three stages of the physiology of the manas.

Mana can be further divided into *Kriyatmaka mana* and *niyamaka mana*. The *Kriyatmaka mana* is regulated by Vata, resides at *Mastishka*, is related to the Central nervous system, and causes nervous system disorders. On the other hand, the *Niyatmaka mana* is regulated by *Sadhaka pitta & Oja*, resides at *Hridaya*, is related to the Mind, and produces cognitive, behavioral, and perceptual abnormalities (psychiatric disorders). [5]

IV. PAKSHAGHATA / HEMIPLEGIA

Pakshaghata (hemiplegia) is one of the major neurological disorders, usually caused by the occlusion of blood vessels of the brain by various factors, mainly due to Atherosclerotic thrombosis and embolism. Other causes are cerebral hemorrhage, neoplasms and infection. [6]

Pakshaghata may be defined as the loss of voluntary functions of one side of the body. By afflicting one side of the body, Vata causes diminution of the vessels and nerves leads to contraction of either one leg or one arm with aching and piercing pain. That condition is to be known as *ekangaroga* (monoplegia). If it affects the whole body, it is called *sarvangaroga* (quadriplegia). The description of pakshaghata can be interpreted with hemiplegia. Hemiplegia, paralysis of the muscles of the lower face, arm, and leg on one side of the body, it can be caused by various clinical conditions like CVD, trauma, brain tumor, stroke, meningitis, etc. [7][8]

A. Classification of pakshaghata-

Sushruta Samhita (one of the main texts of Ayurveda) classifies the disease into 3 types as per their etiopathogenesis. They are-

- *Suddha Vataja Pakshaghata*- The pakshaghata where the Vata is aggravated due to its own Nidana (causes).
- *Anyadosha Samsrista Pakshaghata*- where the Vata is associated with other Dosha to manifest the disease.
- *Kshaya Hetuja Pakshaghata*- where the Vata is aggravated as a result of Dhatu (Body tissue) Kshaya (depletion). [7]

B. Nidana of Pakshaghata/ Causes of Pakshaghata-

In Ayurveda, each category of Pakshaghata is supposed of having a different Nidana. But some of the common nidanas are-

- *Aharaja Nidana* (Food habits that leads to pakshaghata)- intake of dry, non-oily food, taking a small amount of food, habitual intake of food having one taste only (e.g.- taking only spicy food), taking cold and stale food.
- *Viharaja Nidana* (Activities that leads to pakshaghata)- a physical exercise in excess amount, excessive fasting, sudden or prolonged exposure to wind and sun, vigil
- *Manasa* (Mind related)- anxiety, grief, fear
- *Agantuja Bhutopasraga* (external factors such as viral or bacterial infection)
- Direct depletion of Dhatu by excessive elimination of phlegm, blood, semen, and other excreta.
- Physiological cause- age [8]

C. Purva-Roopa (Prodromal Symptoms)-

The *Purva-Roopa* of pakshaghata are often *Avyakta* (not observed) as it has a sudden onset. We can consider - difficulty in speaking, weakness in the arm or leg, and vertigo as the prodromal symptoms of Pakshaghata or Hemiplegia. [7]

D. Rupa (Symptoms) of pakshaghata-

As per Charaka Samhita-

- Loss of voluntary movements
- Pain
- Aphasia or dysarthria

As per Madhava Nidana-

- Pitta dominant Pakshaghata- burning sensation, fever, unconsciousness
- Kapha Dominant- Inflammation, heaviness, and stiffness [7]

E. Samprapti (Pathogenesis) of Pakshaghata-

Acharya Charaka has explained the samprapti in Charak Samhita.

Nidana Sevan (Indulgence in Causative factors)

Vata gets aggravated

Paralyzes one side of the body either left or right

Immobilize the side in association with pain and loss of speech

Results in pakshaghata [7]

F. Ayurvedic Management of Pakshaghata-

Nidana Parivarjana (eliminating the causative factors), Shamana (pacifying the vitiated doshas) and Shodhana (elimination of the vitiated doshas), and use of natural medicines are the basic line of treatment suggested by the traditional text of Ayurveda. Ayurvedic drugs like sariva (*Hemidesmus indicus*) and manjistha (*Rubia cordifolia*) remove the vitiation of the Rakta (blood tissue) and balance the rakta dhatu. [9]

Acharya Charaka has advised Snehana (oleation), Swedana (sudation), Shodhana, and Shamana for Vatavyadhi. Snehana therapy will help to balance out the Vata dosha, Swedana will help to unblock the channels and liquefies the doshas. After these therapies, Panchakarma is advised to eliminate the Vitiated doshas. Panchakarma lubricates the body, reduces dryness, empowers the muscles, removes stiffness, and improves muscle tone therefore panchakarma possesses great symptomatic relief in pakshaghata. [9]

Swedana Snehasanyukta Virechanam is the treatment protocol as per Acharya Charaka. Sudation therapy, oleation therapy, and Purgation therapy should be done. Acharya Sushruta has suggested the following therapies- Snehana, Swedana, Mridu Vamana (Mild emesis), Virechana (Purgation), Anuvasana, and Asthapana Basti (Medicated enema). He has also mentioned other supportive therapies such as Abhyanga (massage with anu oil), Shirobasti, Upnaha Sweda, and enema with Bala oil.[7]

Herbs which are useful for managing pakshaghata-

- Madhuka (*Glycyrrhiza glabra* Linn)
- Sariva (*Hemidesmus indicus* R. Br)
- Haridra (*Curcuma longa* Linn)
- Bhunimba (*Andrographis paniculata*)
- Ananta (*Fagonia arabica*)
- Pippali (*Piper longum*)
- Sunthi (*Zingiber officinale* Roscoe)
- Haritaki (*Terminalia chebula*)[9]

Medicines for Pakshaghata-

- Rasadi gutika
- Pakshaghata guggulu
- Khanjanikari Rasa
- Navagraharajsheerobhushana Rasa
- Vata rakshas Rasa
- Narayana Taila
- Bruhata Vishnu Taila [10]

V. APASMARA / EPILEPSY

Apasmara is a common neuropsychiatric disorder characterized by intermittent loss of consciousness, memory, abnormal movements, and blackouts. Apa means to lose and smara mean memory. The clinical presentation

of this disease simulates the seizure disorders described in the conventional medical literature.[11]

Epilepsy is a central nervous system (neurological) disorder in which brain activity becomes abnormal, causing seizures or periods of unusual behavior, sensations, and sometimes loss of awareness. It is a chronic non-communicable disease of the brain that affects around 50 million people worldwide.[12][13]

Apasmara is a psychosomatic disorder involving memory, intellect, and mind and presents with cardinal features such as transient loss of memory, abnormal movements of the body, and blackouts. Apasmara is counted, in Ayurvedic texts, among the eight *mahagada* (most dreadful diseases). [11]

Epilepsy is a common neuropsychiatric condition involving mainly the brain, nervous system, and psyche. However, Ayurveda emphasizes the heart, the abode of consciousness and mind, as its core pathological site while covering diseases of memory, intellect as well as psyche under the umbrella of apasmara.[11]

Acharya Charaka has described 4 types of Apasmara-

- Vataja
- Pittaja
- Kaphaja
- Sannipataja

Each of them has a different set of signs and symptoms.[11]

He has also mentioned the type of people who are more vulnerable to the disease. They are-

- Whose mind is afflicted by rajas and tamas
- The tridoshas are imbalance and excessively aggravated
- Those who take stale and impure food
- Those who don't follow the Dincharya and Ritucharya
- Those who observe improper techniques of treatment and resort to unhealthy regimens and behavior
- Who practices improper bodily movements and follows improper postures
- Suffering from excessive degeneration or debilitation [11]

A. Nidana/ Causes-

- *Aharaja Nidana* (Food habits that leads to apasmara)- intake of dry, non-unctuous food, taking a small amount of food, habitual intake of food having one taste only (e.g.- taking only spicy food), taking cold and stale food.
- *Viharaja Nidana* (Activities that leads to apasmara)- a physical exercise in excess amount, excessive fasting, sudden or prolonged exposure to wind and sun, vigil
- *Manasa* (Mind related)- anxiety, grief, fear
- Individual causes that lead to a specific increase in Vata, Pitta, and Kapha [11]

B. Characteristic features of apasmara

अपस्मारं पुनः स्मृतिबुद्धि सत्त्वसम्लवाद्दीभत्सचेष्टमावस्थिकं तमः प्रवेशमाचक्षते ॥५॥

- Occasional loss of consciousness
- Associated with aberrant activities and behavior
- Perversion of intellect and memory [11]

C. Purvarooopa / prodromal symptoms

- contraction of eyebrows
- erratic and constant movement of eyes
- auditory hallucinations
- excessive salivation
- nasal discharge.[11]

D. Symptoms of Epilepsy-

- Temporary confusion
- A staring spell
- Stiff muscles
- Uncontrollable jerking movements of the arms and legs
- Loss of consciousness or awareness
- Psychological symptoms such as fear, anxiety, etc. [12]

E. Roopa / Symptoms of Apasmara as per their types

Vataja Apasmara-

- More frequent episodes
- Instant loss of consciousness and regain it quickly
- Bulging of eyes
- Incoherent speech
- Frothy vomit
- Stiffness of neck
- Drooping for head to one side
- Contraction of fingers
- Exaggerated movements of upper and lower limbs
- Greyish tint in nails, eyes, skin [11]

Pittaja Apasmara-

- Frequent episodes
- Instant loss and regaining of consciousness
- Burning sensation
- Strenuous breathing
- abnormal/ dragged movements
- Yellow-coppery tint in eyes, nails, and skin [11]

Kaphaja Apasmara

- Less frequent episodes
- Gradual loss and regain of consciousness
- Frequently falling down
- Less abnormal movements
- Drooling
- Whitish discoloration of skin, eyes, and nails[11]

Sannipataja Apasmara

- It is due to a combination of all the three Doshas
- Have all the symptoms of the 3 doshas or as per the dominance of the dosha[11]

F. Samprapti/ Pathogenesis of Apasmara

Excessive Nidana sevana

Doshas get aggravated and spread throughout the body

Rajas and Tamas takes over Sattva

Doshas get accumulated in Hridaya (Site of Manas)

Leads to apasmara [14]

G. Ayurvedic Management of Apasmara-

Acharya Charaka has explained the treatment of Apasmara in detail in his book Charaka Samhita.

तैरावृतानां हृत्स्रोतोमनसांसम्प्रबोधनम्
तीक्ष्णैरादौ भिषक्कुर्यात्कर्मभिर्वमनादिभिः॥१४॥

The heart, channels, and mind which are obstructed by doshas should be cleared first by strong remedial measures such as *Vamana* (emetic therapy), etc.[14]

वातिकं बस्तिभूयिष्ठैः पित्तप्रायो विरेचनैः।
श्लैष्मिकं वमनप्रायैरपस्मारमुपाचरेत्॥१५॥

He has also mentioned the management as per the dominant dosha involved in the disease. *Vatika apasmara* shall be treated mainly with *basti* (medicated enema) therapy; *Paittika apasmara* shall mainly be treated with *virechana* (purgation) therapy and *shlaishmika apasmara* shall mainly be treated with *Vamana* (emesis) therapy. After proper purification of the body is done, proper counseling of the patient should be done. [15]

He has also mentioned to do *abhyanga* (oil Massage) with mustard oil cooked in 4 times goat urine and *Udvardana* (powder massage) with cow dung. *Nasya* with *Kapila* cow's urine or *Panchagavya ghrita* is also suggested.[15]

Single Drugs given are-

- Bala
- Ashwagandha
- Shatavari
- Brahmi
- Shankhpushpi
- Aprajita
- Yashtimadhu

Medications for Apasmara-

- Ananda Bhairava Rasa
- Bhootabhairav rasa
- Puran Ghrita
- Pachatikta Ghrita
- Panchagavya Ghrita
- Suvarnamakshika Bhasma
- Suvarna Bhasma
- Panchaloha Rasayana
- Brahmi Vati
- Ashwagandharishta[16]

VI. KAMPAVATA/ PARKINSON'S

According to Ayurveda, *Kampavata* is a *Nanatmaja* disorder of *Vata*. *Kampavata* was first narrated by Acharya *Madhavakara* under the term *Vepathu*. *Basavarajiyam* was the first to describe by explaining the clinical picture as

tremors, rombergism, dementia, and disturbed sleep. In the time of Charaka and Sushruta, clusters of symptoms like tremors, stiffness, rigidity, bradykinesia, and disturbance in the speech were described. These symptoms are quite similar to that of Parkinson's disease. [17]

Parkinson's disease is named after James Parkinson who described the disease as shaking palsy.

It is a progressive neurological disorder that affects movement. It is generally represented by a triad of cardinal motor symptoms- rigidity, bradykinesia, and tremors. [18]

A. *Nidana of Kampavata-*

Kampavata is a disorder of Vata so the factors which lead to vitiation of Vata further lead to kampavata.

The causes can be

- Aharaja (Dietic Factors)
- Viharaja (Regimen Factors)
- Manasika (Psychological Factors)[17]

B. *Purvaroop/ Prodromal Symptoms-*

- Avyakta in nature so they are rarely visible.
- Fatigue
- Body Ache
- Loss of memory
- Weakness
- Slight trembling in one of the hands and arms [17]

C. *Roopa/ Symptoms -*

- Tremors
- Rombergism
- Disturbed sleep
- Dementia
- Rigidity
- Slow movements
- Parkinson's gait
- Flexed posture
- Speech disorder
- Depression [17]

D. *Samprapti of Kampavata-* Nidana Sevana

This leads to Vata aggravation

Due to its subtle nature, it impels some Kapha

Which obstructs the channel leading to the manifestation of *kaphavarita vata*

Mainly Udana and Vyana Vayu gets associated with Kapha

This leads to the involvement of dhatus (body tissues)

Body depletion and symptoms of kampavata [17]

E. *Pathogenesis of Parkinson's*

Parkinsonism is caused by degeneration of pigmented neurons (Dopaminergic neurons) in the zona compacta of substantia nigra, resulting in a decrease of dopamine levels

in the brain which leads to motor dysfunctions viz. resting tremor, bradykinesia, and rigidity.[17]

F. *Management of Parkinson's*

Nidana Parivarjana- elimination of the causative factor
Shamana and Shodhana Chikitsa

Shodhana Chikitsa constitute of -

Snehana (oleation therapy) - Mild massage with either of the tails can be done; mahanarayan taila, kshirabala taila, sahacharadi taila, Bala taila, and ashwagandha taila.

After that Sarvanga Swedana (sudation), Nadi sweda or Patra Pinda Swedana can be done.

Basti can be given as it is the best therapeutic measure for Vata vyadhi. Matra Basti with sauvarchala and satapushpa taila can be given.

Apart from these Nasya with mashadi taila, panchagavya ghrita, Narayana taila, ksheera, etc. can be done. Shirobasti and Shirodhara are also useful. [18][19]

Single Drugs -

- Ashwagandha
- Kapikachhu
- Bala
- Brahmi
- Rasona
- Yavani
- Shatavari
- Aparajita

Formulations-

- Kampavatahar rasa
- Narayana Taila
- Dashmoola kwatha
- Brahma Rasayana
- Puran ghrita
- Panchagavya ghrita
- Chaturbhujra rasa
- Brahmi taila
- Kshirabala taila
- Ashwagandha arishta
- Amritadi taila
- Rasnadi taila [18][19][20]

VII. CONCLUSION

Ayurveda is the Ancient medical system of India and it has been in existence for almost 3000 years now. Ayurveda has mentioned various types of diseases and there treatment as well as it provides information about the daily routine, seasonal routine, physiology and anatomy of human body, various surgeries. Its main aim is to prevent the health of the healthy ones and cure the unhealthy ones. Treatment of Vata vyadhi is very well elaborated and has been proven beneficial. Ayurveda have tremendous amount of 'treatment opportunities' to offer.[21]

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