

MANAGEMENT OF NEURODEGENERATIVE DISORDERS TROUGH *MURDHA TAILAS, NASYA & VASTI*

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ABSTRACT

Neurodegenerative diseases as diverse as Alzheimer's, Parkinson's, and Creutzfeldt-Jakob disease share a common pathogenic mechanism involving aggregation and deposition of misfolded proteins, which leads to progressive central nervous system disease. Although the type of aggregated protein and the regional and cellular distribution of deposition vary from disease to disease, these disorders may all be linked by similar pathways of protein aggregation with fibril formation and amyloid deposition. This perspective on pathogenesis suggests that a wide variety of neurodegenerative diseases can be grouped mechanistically as brain amyloidoses. An outlook that yields novel insights into potential therapeutic approaches that may be applicable across the broad spectrum of neurodegenerative disease. In *Ayurveda* neurodegenerative disorders are treated with *murdha tailas* like *siro dhara, siro vasti, siro pichu & siro abhyanga*, a part from this *nasya & vasti* plays a main role in the management of neurodegenerative disorders. Here modes of action of the above procedures are explained hypothetically based on results obtained in our practice.

Keywords: Neurodegenerative Disorders, *Murdha tail*, *Nasya*, *Vasti*.

INTRODUCTION

Ayurveda has classified the whole physiological functions of the body in to three main groups based upon the similarity of function and inter relation between them. The first and foremost is *vata*, which deals with all stimulatory and controlling functions of the body. It basically deals with or can be grossly equated with neuro hormonal functions as well as the sensory effects, with this back ground when we look at the functions of *vata* /vitiated *vata* meager the Signs & Symptoms appears to be similar to neurological and hormonal pa-

thogenesis .when we retrospectively look at the prognosis of the diseases with treatment. The planned treatment based upon the above procedures has given wonderful results with reference to that time, and similar results are even seen now. Only the difference is that with vast research on all fronts in chemistry, physics & electronics we are able to pinpoint the difference in pathology and physiology but prognostically such results are varying and *Ayurveda* treating cases denovo /post treatment elsewhere is still giving ample results

needing a full scale of research coordination between the investigations and treatment.

Pharmacodynamic understanding of Vasti;

Probable Mode of Action of Vasti:

Panchakarma therapies are popular in the field of *Ayurvedic* disease management. Though their effect and safety is well established by the evidence of experiences since many centuries, their mode of action in front of contemporary scientific point of view is still a question. To take *Ayurveda* to the global platform it is necessary to try to explain the complete pharmacokinetics of *Ayurvedic* medicines and mode of actions of available therapies. It can be understood in the following way:

- By neural stimulation mechanism
- By excretory mechanism.(Detoxification Mechanism)

By Neural Stimulation Mechanism;

The gastrointestinal system has a network of nerve fibers, which is known as 'Enteric Nervous System (ENS)'. Similar to brain ENS sends and receives impulses, record experiences and responds to various stimuli. Its nerve cells are bathed and influenced by same neurotransmitters. Gut brain (ENS) is located in the sheaths of tissue lining the oesophagus to colon. Considered a single entity, it is a network of neurons, possessing neurotransmitters and proteins that zap? messages between neurons regulates functioning of body like those found in brain proper and a complex circle that enables to act independently, learn, remember and produce gut felling. The gut's brain reportedly plays a major role in human happiness and misery. Many gastrointestinal disorders like colitis and irritable bowel syndrome originate from problems within gut's brain.

ENS is loosely connected with central nervous system (CNS) through vagus nerve and can mostly be function alone, without instruction from top. Internal viscera are again

highly supplied with nerve fiber of Autonomic Nervous System which in turn has connection with CNS. Details of how the enteric nervous system mirrors the central nervous system have been emerging in the recent years, according to Dr. Mivhael Gershon, professor of anatomy and cell biology at Columbia Presbyterian medical center in New York. He is one of the founders of new field of medicine called "Neurogastroenterology". The gut contains 100 million neurons, more than that of in the spinal cord. Major neurotransmitters like serotonin, dopamine, glutamate, nor epinephrine and nitric oxide are in the gut. Also two dozen small brain proteins, called neuropeptides are there along with the major cells of immune system.

The brain sends signals to the gut by talking to a small number of 'command neuron' which in turn sends signals to the gut interneuron that carry up and down the pike. Both command neurons and interneurons are spread throughout the two layers of the gut tissue called 'myenteric plexus and the sub mucosal plexus'. Command neurons control the pattern of activity. The vagus nerve only alters the volume by changing its rate of firing.¹

ENS works in synergism with the CNS. Stimulation with *vasti* (either by chemo or mechano receptors) may lead to activation of concerned part of CNS which precipitates result accordingly. Again it is not mandatory for a drug to stay in long time contact to the receptor e.g. like in Proton Pump inhibitor where drug interact and flush out from circulation, it is known as "HIT AND RUN MODULE" of pharmacodynamics. Same module of pharmacodynamics may be hypothesised for *Niruha vasti*. There is close resemblance in the functioning of *Vata Dosha* and nervous system and *vasti* is prescribed as the best remedy for *Vata*. It again validates the efficacy of *vasti karma* on nervous system.

Detoxification mechanism;

Niruha vasti is hyper osmotic solution which causes movement of solvent from cells of colon to the lumen containing *vasti Dravya* facilitates the absorption of endotoxin and produce detoxification during elimination. Kalka used in the *vasti* has got irritant property along with other ingredients which may induce colonic distention. The distention stimulates pressure which produces evacuatory reflex. The sigmoidal, rectal and anal regions of large intestine are considerably better supplied with parasympathetic fibers than other part of intestine; they are mainly stimulatory in action and function especially in defecation reflexes. A volume of about 100 cc of gas is estimated to be present in the tract which is readily expelled by *vasti*.

- The administration of *Niruha vasti* shows a decline in the pyruvic acid level which results in higher vitamin B₁ level. Moreover a reduction in the B₁ level leads to degeneration of myelin sheath, neurological disorders and ailments of the digestive system
- *Anuvasana vasti* which is basically a nutritional one where in specific medicated oils stimulate the concerned nerve cells in the ENS indirectly giving nutrition as well as stimulation to the nerve cells and it is amply proved that lipids play a role in the formation and function of the neurological system. This could be the reason why *Niruha vasti* is advocated in combination of *Anuvasana vasti* so that both excretory and nutritional effect is seen.²

TROUGH MOORDHA TAILAS;

1. Pharmacodynamics of *Sirodhara*;

- Medicated liquid that is poured from the height of 4 *angula* (inches) on the forehead produces some magnetic waves due to flow of oil.
- Strikes on the surface of the skin & vibrations (electrical waves) are created &

transformed to the cerebral cortex & hypothalamus.

- Hypothalamus acts as the centre of the stimulation & inhibition centre in the body, Hence soothing effect created on hypothalamus.
- It results in the secretion of various neurotransmitters like epinephrine, serotonin, dopamine etc.....
- Hypothalamus controls the functions of the pituitary gland which is known as master gland of our body. Pituitary gland internally controls all the systems of the body.
- The hypothalamus & pituitary gland may play a role in many of the signs & symptoms associated with neurodegenerative diseases such as Alzheimer's, Parkinson's, Multiple sclerosis etc.,,,,,,,,,,,,,,
- So dhara creates soothing effect on hypothalamus. And stimulatory effect on the nerve cells thereby increasing the function of the inert cell or stimulating the normal cells to take up additional function of the inert cells. This could be the reason for some relief seen in the above cases.

2. Pharmacodynamics of *sirovasti*;

- Retention of medicated liquid on head/skull stimulates the underlying cortex of the brain.
- In Parkinson's, *sirovasti* stimulates the dopaminergic neurons in the substantia nigra pars compacta & reduce the mechanism of degeneration of the dopaminergic neurons.
- Prevent the neuro degeneration & lewy bodies formation in the locus ceruleus, nucleus basalis, hypothalamus, cerebral cortex, cranial nerve motor nuclei, central & peripheral portions of Autonomic nervous system.
- The time for *Sirovasti* is till water oozes from the nose and watering of the eyes which could be the exudates from the mucous membrane due to the constant weight of the oil over the head a similar process

may also take place at the level of tissues in the brain and toxins and exudates from the cells may ooze in to the circulation there by stimulate the nerve cells and remove the toxins or oxidates seen in the clinicals

3. Pharmacodynamics of *siropichu*;

- Kept the medicated cotton on parieto occipital junction of the head.
- In Alzheimer's *siropichu* corrects loss of neurons & synapses in cerebral cortex via the diffusion into the superficial venous drainage. i.e Dural venous sinuses.
- By the absorption & diffusion mechanism of medicated oil of *pichu* correct the cognitive impairment, atrophy & degeneration in the temporal lobe, parietal lobe & parts of frontal cortex & cingulated gyrus during the venous drainage.

4. Pharmacodynamics of *siroabyanga*;

Physical pressure moving the fluids in internal environment: Thus the lymphatic drainage will be the prime effect of *Abhyanga*. Lymph possesses a relatively large amount of the amino acid tryptophan, especially when compared with the dietary intake. It likewise has a large amount of albumin (protein), glucose and histaminases (breaks down histamine). Hypothetically, blood aminoacids like tryptophan increase after massage.

An increase in plasma tryptophan subsequently causes a parallel increase in the neurotransmitter (chemical between nerve endings) at motor end plates, and serotonin, which is made from tryptophan. Serotonin has been implicated in several psychiatric diseases with low levels of metabolite found by researchers in depression and schizophrenia. Giving albumin bound protein tryptophan to the brain with proper diet and massage should theoretically increase brain serotonin. In practice the *abhyanga* relieves systems like those caused by serotonin depletion, anxiety, irritability, etc.

Physical pressure acting over neural controls: At motor end plates acetylcholine acts as transmitter in the presence of Calcium ion and facilitates synaptic action potential. The nerve fibers have a myelinated sheet where lipids are the chief ingredients. Na (sodium) and K (potassium) ions are responsible for depolarization in the nerve fiber.

Out of electrolytes calcium, Hydrogen, sodium and potassium produce depolarization and chlorine and potassium are responsible for hyper polarization. This action with the association of melatonin a byproduct of serotonin also synthesized from tryptophan is a neuro chemical causes pleasantness and calming effects in the process of massage. Apart from the effect said the toxins which are settled in the nerve fiber or myelinated sheet and interrupting the conductivity of the nerve impulse are drained out by the exertion of physical pressure on peripheral nerve endings, especially motor and also sensory.^{3,4,5}

Pharmacodynamics Of *Nasya Karma*;

- *Nasya dravya* administered through nasal route.⁶
- *Nasya dravya* reaches at *sringataka marmma*⁷ (i.e cavernous venous sinuses).
- Through cavernous sinuses it enters into *murdha* (ie intracranial circulation).
- Through these it reaches the junction place of *netra, sotra, kanta, & sira muchas*.⁸
- By a process known as diffusion.⁹

The Pharmacodynamics Of *Nasya Karma* Can Be Explained In Light Of The Modern As Follows.

Neuronal Path Way;

- *Nasya dravya* enters into- Olfactory receptor cell-Olfactory nerve-Olfactory bulb-Olfactory tract-Limbic system-Amygdaloid complex-Hypothalamus-Hypothalamus itself regulates functions of nervous & endocrine system.

- It prevents the early vulnerability of the hypothalamus combined with derangements of endorphinergic functions.
- It prevents the reciprocal neuroendocrine & neuroimmunological interactions mediated through hypothalamus.¹⁰

Venous Path Way;

- *Nasya dravya*-diffusion into the capillaries-Facial vein-
- From facial vein it enters into Pterygoid plexus & Pharyngeal plexus
- From pterygoid plexus it enters into intracranial circulation.
- From pharyngeal plexus it enters into systemic circulation.¹¹

Lymphatic Path Way;

This is hypothetical, Injection of dye into the sub arachnoid space, particles appeared lymphatic net work of nasal mucosa through olfactory tract & olfactory bulb.

By all these mechanisms *nasya dravya* enters into brain & stimulate the whole nervous system by its local & systemic effect .And reduces the progressive loss of structure or function of neurons including death of neurons.

CONCLUSION

A part from the above mentioned procedures the main contribution of *Ayurveda* in the form of Herbomineral preparations like, individual drugs *Yashtimadhu, vacha, shankapushpi, brahmi, semandukaparni, ghrita*, and compounds like *brihatvata chintamani, rasrajeshwar ras, ksheerabala tail oral, chaturbujraj* etc are also used in the treatment as a whole but here only the above said procedures are high lightened. Whatever may be the reason or mode of action the above time tested procedures are still giving good results requiring sincere and in depth research using all the sciences prevalent to the better use of the system.

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