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Neurological examination of *Vata Vyadhi* and its management

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ABSTRACT

The nervous system is the major controlling, regulatory and communicating system in the body. it is the center of all mental activity including thought, learning and memory. Nervous system examinations includes general examinations, motor symptoms (i.e. power, nutrition, coordination and involuntary movement), sensory symptoms (i.e. tingling sensation), cranial nerve examination, sphincter disturbances, reflexes (deep tendon reflexes and superficial reflexes). Role of neurotransmitters plays essential role in *Vata Vyadhi*. NCT (nerve conduction test) and EMG (electro myography) also given exact dysfunctioning of particular nerve or muscles and tendon. *Vata* is responsible for control of all the central nervous functioning in the body. it is responsible for all the movements in the body, diseases caused by *Vata* in its vitiated conditioned called *Vatavyadhi*. *Vata* is present in everyone it doesn't produce diseases in everyone. Only vitiated *Vata* is responsible for causing disease, *Vatavyadhi* are more than 80 *Nanatmaj Vyadhi*. *Charak* has stated that causes of all these *Vatavyadhi* can be divided into two types i.e., *Dhatukshayajanya* and *Margavarodhjanya*. Treatment for *Dhatukshayajanya* is *Brihana* and for *Margavarodhjanya* is *Vata-Anulomak Chikitsa.* Sphincter disturbances is treated by *Vata-Anulomak Chikitsa*. Neurotransmitters dysfunctioning is treated by *Rasayana* drugs.

Key words: *Vata, Dhatukshayajanya, Margavarodhjanya, Vata-Anulomak Chikitsa.*

INTRODUCTION

The nervous system is the major controlling, regulatory and communicating system in the body. it is the center of all mental activity including thought, learning and memory. Together with endocrine system, the nervous system is responsible for regulating and maintaining homeostasis. The nervous system consists of the brain, spinal cord, sensory organs and all the nerves that connect these organs with the rest of body. the nervous system is a complex network of nerves and cells that carry messages to and from the brain and spinal cord to various part of the body.

Vata is responsible for control of all the central nervous system functions in the body. it is responsible for all the movements in the body. Disease caused by *Vata* in its vitiated conditions is called "*Vatavyadhi*".

Vata is present in everyone it doesn't produce diseases in everyone. *Vata* is morbid (disease causing) only when it vitiated. *Vatavyadhi* are more than 80 *Nanatmaj Vyadhi "Vatadrute Naasti Ruja"* clearly indicates importance of *Vata* in pain management. Charaka has stated that causes of all these *Vatavyadhi* can be divided in two types *Dhatukshayajanya* and *Margavarodhjanya*.

History of patient

General history - Name, Age, Sex, Occupation, Right or left handed, Consaguinity[1]

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Motor symptoms - Power, Nutrition, Coordination, Involuntary Movements.[2]

A) Power - Upper Limbs

Proximal - lifting the arm above the head eating

Distal - sewing , writing, buttoning etc.

Lower Limbs

Proximal - climbing, stare up and down, squatting and getting up from squatting position.

Distal - slippers follow from the foot.

Running - walking with or without support, standing without support, moving limbs in the bed or complete paralysis.

B) Nutrition - Wasting of muscles (proximal & distal), Atrophy, Hypertrophy.

C) Co-ordination

Unsteadiness : for cerebellar ataxia

Difficulty in feeling the ground and unsteadiness increasing in the dark (for sensory ataxia - An inherited condition in which nerve cell in the brain breakdown over time)

Difficulty in reaching in the target.

D) Involuntary movements

Tremors

Dystonia - involuntary muscle contraction

Hemiballismus

Flexor spasm - involuntary contraction or twitching of muscles fibers, visible under skin spontaneous contraction of muscle fiber that do not cause movement of joint.

Fasciculations

Sensory symptoms[3]

1. Tingling, numbness, root pain.
2. Feeling hot and cold-water during bath.
3. Feeling the around well or feeling the ground like cotton wool.

Sphincter disturbances

Bladder

a) feeling the sensation of bladder fullness.

b) Initiation of micturition immediately when desired.

c) Control of micturate has occurred.

d) Complete evacuation of the bladder area feeling of residual urine.

e) Histology of catheterization

Bowel : as above

Impotency : in males

Higher functions

1. **Mental symptoms :** consciousness, delirium, hallucinations.
2. **Speech disturbance :** nation through content, insight, emotion state. (ICP- 2-15 mm of Hg)
3. **Symptoms of raised intracranial tension :** headache, projectile vomiting, blurred vision, altered sensation, changes stroke, bradycardia, hypertension, yawing, hiccupping respiration, papilledema.
4. **Unconsciousness**
5. **Convulsion :** inquire for aura, tonic and clonic convulsion, deviation of eyes, incontinence of urine and stools, tongue bite, fall and injury, post convulsion drowsiness or unconsciousness, sleep attacks.

For etiology

a) Hypertension, diabetes, heart disease.

b) Tuberculosis, syphilis, HIV infection.

c) Trauma and fever.

d) Vaccinations, drug or sera administered.

e) Alcohol, smoking, tobacco, chewing gutkha, recreational drugs.

f) Similar episode in the past, in the family or in the surroundings.

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General examinations[4]

1. Build, nutrition.
2. Nails and conjunctiva: Pallor, clabbing, cynosis, icterus.
3. Lymphadenopathy, edema on feet, JBP.
4. Spine : for kyphoscoliosis.
5. Skin : for hypopigmented areas, hyperpigmented areas, café-au-loit spots, nodules etc.
6. Thickened nerves: thickening of nerves is a conspicuous feature in leprosy and hypertrophic neuropathy of infancy dejerine and salts. Milder degree of clinically appreciable thickening may occur in peroneal muscular atrophy and amyloidosis.

CNS examinations

1. Higher functions

a) Consciousness

b) Behavior

c) Memory - past and present

d) Orientation in time, planned persons

e) Hallucination, delusions.

f) Speech

2. Cranial nerves

1. 1st Cranial nerve: sense of smell in each nostril.
2. 2nd Cranial nerve: acuity of vision, field of vision, color vision and fundus examinations.
3. 3rd, 4th and 6th Cranial nerve:
   a. external ocular movement on follow and command.
   b. pupils : positions, shape, size, equality, reaction to light and accommodation and ciliospinal reflex.
4. 5th Cranial nerve
   a. sensation over the face.
   b. masseters, pterygoids and temporalis muscles.
   c. corneal and conjunctival reflexes and jaw jerk.
5. 7th Cranial nerve
   a. eye closure, frowning, raising the eyebrows.
   b. Blowing, whistling and showing the teeth.
   c. nasolabial fold, platysma.
6. 8th Cranial nerve
   a. Hearing tick of the watch.
   b. Rinne's test
   c. Weber's test
7. 9th Cranial nerve
   a. Uvula on saying, 'at' – central or deviated to one side.
   b. Gag reflex.
8. 12th Cranial nerve
   a. Tongue movements.
   b. Wasting, fasciculation and fibrillation.
9. 3rd Motor System
   a. Nutrition : Wasting or Hypertrophy
   b. Tone : normal, hypertonia or hypotonia.
   c. Power : graded from 0 to V.
   d. Coordination : by finger - nose test, knee heel test, rapid alternate movements at the wrist.

Sensory Symptoms[5]

a) Superficial sensation: touch, temperature and pain.

b) Deep sensation: positions, joint and vibration.

c) Cortical sensation: tactile, localization, tactile discrimination, tactile extinction and asterognosis.

d) Calf tenderness or anesthesia of the calves.

Reflexes : Graded as Absent (-), decreased (+), normal (++), brisk (+++) and brisk with clonus (++++) e.g.

	BJ	SJ	TJ	KA	AJ
Right	+++	++++	+	-	+
Left	++	+++	+++	++	_

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Types of reflexes : There are two type of reflexes

Superficial reflexes[6]

1. Planter reflex (S1)
2. Abdominal reflex (T6-T12)
3. Cremesteric reflexes (L1)
4. Bulbo cavernous reflex (S2-S4)
5. Anal reflex (S4-S5)
6. Hoffmann's sign

Superficial Spinal Reflexes

Reflex	How excited	Clinical Result	Level of cord
Anal	Stroking or scratching skinnear anus	Contraction of anal sphincter	3rd and 4th sacral segment
Bulbocavernous	Pinching dorsum of glans penis	Contraction of bulbocavernous	3rd and 4th sacral segment
Planter response	Stroking sole of foot and toes or leg	Flexion of toes and foot	5th lumbar and 1st sacral
Cremasteric	Stroking skin at upper and inner part of thigh generally children and old age absent. The cremasteric reflex can be often be more hunter canal – corticospinal tract disorder absent, also absent in hydrocoele, varicocele, orchitis	Upper movement of testicles easily excited by pressing over	1st and 2nd lumbar segment The sartorius in the lower limb.
Abdominal	Stroking abdominal wall below costal margin an in iliac fossa	Contraction of abdominal muscles	2nd and 12th thoracic segment
Scapular	Stroking in skin of interscapular region	Contraction of scapular muscles	5th cervical to 1st thoracic segment

Deep tendon reflex (DTR)[7]

1. Biceps
2. Triceps
3. Supinator (Brachioradialis)
4. Finger flexion
5. Knee jerk
6. Ankle jerk

Deep Tendon Reflex (DTR)

Reflex	Nerve	Mode of Action	Responses
Biceps (C5-C6)	Musculocutaneous	Below upon the biceps tendon	Flexion of the elbow
Suppinator (C5-C6)	Radial	Below upon the tendon of brachioradialis at the distal end of the radius	Flexion of the forearm with supinator
Triceps (C7-C8)	Radial	Below upon the triceps tendon	Extension of the arms
Finger flexion (C7-C8)	Median & Ulnar	Below upon the palmer surface of the semiflexed fingers	Flexion of the fingers and functions
Knee (L2-L4)	Femoral	Below upon the quadriceps tendon	Extension of the knee
Ankle (S1-S2)	Sciatic	Below upon the tendocalcaneous	Plantar flexion of the ankle

Miscellaneous

1. Sign of meningeal irritation, neck stiffness, Kerning's sign, Brudzinski sign.

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2. S.L.R. And laseque's sign.
3. Skull and spine.
4. Gait inducing romberg's sign.
5. **Neck stiffness :** it is characterized by stiffness of neck and resistance to passive movements with pain and spasm on attempted motion. The chin cannot place upon the chest.
6. **Causes are :** meningitis, subarachnoid hemorrhage, tetanus, strychnine poisoning, hysteria, cervical spondylois,
7. In meningitis neck stiffness is absent in severe and terminal cases or very young infant.
8. **Kerning's sign :** with the hip flexed the knee is extended normally. It can be done up 135 degrees. In meningitis it is restricted due to spasm of hamstrangs.

Relevant examinations of other system

CVS

a) Valvular heart disease : heart sound, murmur.
b) Blood pressure for Hypertension.
c) Peripheral pulsation including carotid pulsation.
d) Bruits : over carotid or eye balls.

AS

a) Hepatospleenomegaly
b) Ascitis

RS

a) Chest expansion
b) Dullness or hyper resonant note.
c) Breech sound.
d) Foreign sound.
e) Vocal resonance.

Differentiating features of upper and lower motor neuron lesions[8]

	UMN	LMN
Site of the lesion	Cerebral hemesphere, cerebellum, brain stem, spinal cord	Anterior horn cell, nerve roots, peripheral nerve, neuromuscular junction, muscles.
Muscle weakness	Quadriplegia, hemiplegia, diaplegia and paraplegia.	Proximal (myopathy) Distal (neuropathy)
Muscle tone	Spasticity, rigidity	Hypotonia
Fasiculation	Absent	Present (particularly tongue)
Tendon reflex	Hyperreflexia	Hyporeflexia
Abdominal reflex	Absent (depending on the involve spinal nerve)	Present
Sensory loss	Cortical sensation	Peripheral sensation
Electro myography (EMG)	Normal nerve conduction, decreased interference patterns and firing rate.	Abnormal nerve conduction, large motor unite, fasiculation and fibrilation.
Involuntary movements	Associated involuntary movement.	No involuntary movement
Planter reflex	Extensor planter response	Flexor planter response

Differentiating features of upper and lower motor neuron lesions

Upper motor neuron lesion	Lower motor neuron lesion
Spasticity – muscular hypertonicity, tightness of muscles, diffuse distribution, weakness of voluntary muscles	Flaccidity – muscle tone is lacking and tendon reflex is absent, distribution confined to individual muscles, paralysis of individual muscles or group of muscles

Upper motor neuron lesion

Lesion site	Lesion in the central nervous system which is above the anterior horn of the afferent pathways or above the motor nuclei of the efferent pathways.

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Reflexes	1. Pathological reflexes such as positive babinski and haffman sign present. 2. Hyperreflexia or increased deep reflexes present.
Strength	Hypertonia and spasticity
Sensation	Sensory deficits will be dependent on which part of the sensory tracts is impacted by the lesion. Dorsum column mediate lemniscus pathways is responsible for our discriminatory sense. ▪ two-point discrimination ▪ vibration sense ▪ proprioception ▪ light touch Spinothalamic tract is responsible for our self-protective reactions in response to stimuli that are potentially harmful. ▪ nociceptive information (pain) ▪ temperature ▪ tactile, itch and sextual sensations. ▪ crude touch ability to identify the sensation of touch without localization

Lower motor neuron lesion

Lesion site	Lesion in the peripheral nervous system.
Reflexes	Hyporeflexia or diminished reflex present
Strength	Hypertonia, atrophy, reduce strength, flaccidity.
Sensation	Sensory deficit will be dependent on the spinal nerve involved- creation a dermatomal loss of sensation or cutaneous nerve involved which would impact a path of skin on the limbs.

DISCUSSION

The nervous system helps all the parts of the body to communicate with each other. It also reacts to changes both outside and inside of the body. the nervous system uses both electrical and chemical means to send and receive message.

The importance of neurological examinations in *Vatavyadhi* is always play important role in the diagnosis of disease. The essential component in neurological examination is motor symptoms (i.e., power, nutrition, coordination and involuntary movement), sensory symptoms (i.e., tingling sensation), cranial nerve examination, sphincter disturbances, reflexes (deep tendon reflexes and superficial reflexes). Role of neurotransmitters plays essential role in *Vata Vyadhi*. NCT (nerve conduction test) and EMG (electro myography) also given exact dysfunctioning of particular nerve or muscles and tendon.

The power also gives information about neurological dysfunctions, reflexes were exagrated in case of UMNL (upper motor neuron lesion) and diminished in LMNL (lower motor neuron lesion).

Signs are also play important role in neurological examination (for examples romberg's sign, Kerning sign, Trendelenburg sign, Bruzedniski sign, Babinski sign, Hoffmanns's sign etc.)

In case of cervical and lumbar vertebrae disorder neurological examinations are essential feature. In case of cervical disorder compression test, distraction test, Adson test, swallowing test, Valsalva test are compulsory to rule out final diagnosis. In case of lumbar vertebral disorders SLRT, cross SLRT, reverse SLRT, Femoral scratch test, Bowstring test is acquired for final diagnosis in *Vata Vyadhi*.

Treatment for *Dhatukshayajanya* is *Brihana* and for *Margavarodhjanya* is *Vata-Anulomak Chikitsa.* Sphincter disturbances is treated by *Vata-Anulomak Chikitsa*. Neurotransmitters dysfunctioning is treated by *Rasayana* drugs.

CONCLUSION

It can be concluded that neurological examination is essential feature in *Vata Vyadhi* diagnosis. After examination we confirm final diagnosis and treatment of particular disease and its treatment become more convenient. Neurological examination briefs us about detail information related to *Vata Vyadhi*. As we belong to Ayurvedic *Chikitsa Padhhati*, we should treat the patient only with the help of Ayurvedic drugs although we can take help from modern science

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(Allopathic approach) for diagnosis only (like history taking, examination and investigation). In Ayurvedic approach and modern simultaneously but it should be Cristal clear that specially for treatment we can only use Ayurvedic approach. So, we can make perfect diagnosis with the help of new modern tools (as it is not available in Ayurvedic set up). So, we can make perfect diagnosis with the help of new modern tools but treatment part only will be Ayurvedic. Actually, results of Ayurvedic treatment are better and no side effects.

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