

## AN OVERVIEW ON PARKINSON'S DISEASE AND ITS MANAGEMENT THROUGH PANCHAKARMA

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### ABSTRACT

Parkinson's disease is one of the most common progressive neurodegenerative disorders of the central nervous system, mainly affecting motor symptoms. The motor symptoms of Parkinson's disease (resting tremor, bradykinesia and muscular rigidity) result from the death of dopamine generating cells in the substantia nigra, a region of the midbrain. Although the presence of non-motor symptoms (sleep disorders, depression and cognitive changes) which always precede the classical motor symptoms supports neuronal loss in non-dopaminergic areas as well. Parkinson's disease gets its name from an essay written in 1817 by British pharmacist James Parkinson entitled "an essay on shaking palsy." 6.3 million people worldwide suffer from Parkinson's disease. It is the 2<sup>nd</sup> most prevalent neurodegenerative disorder after Alzheimer's disease affecting 1% of those over 65 and 3% of those over 80 in age. Because of the non-availability of curative treatment in modern science, this disease remained a great problem in an ageing society. Direct reference to the Parkinson's disease in the ancient *Ayurvedic* literature is sparse and refers only to related symptoms including *Kampa*, *Stambha*, *Chesta sanga* etc. are described in different contexts of *Charak Samhita*, *Sushruta Samhita* and *Basavarajeyam*. Features of *Kampa vata* in *Ayurveda* are comparable to Parkinson's disease of conventional systems of medicine. It is described in the context of *Vata Nanatmaja Vikara* and *Vata vyadhi Chikitsasthana*. *Ayurveda* classics have given detailed description about the treatment of *Vata vyadhi* but detailed description about the treatment of *Kampavata* is mentioned by a few experts only. The present study has been undertaken to have a clear understanding of the etiopathogenesis, symptoms and diagnosis of *Kampavata* and to finalise the *Panchakarma* treatment protocol according to *Ayurveda* classics.

**Keywords:** Parkinson's disease, Kampavata, Ayurveda, Panchakarma

## INTRODUCTION

Parkinson's disease (PD) is a gradually enlightened disorder of the central nervous system, characterized by early prominent death of dopaminergic neurons in the substantia nigra pars compacta and the widespread presence of alpha-synuclein, an intracellular protein. Dopamine deficiency in the basal ganglia leads to clinical manifestation of motor symptoms viz. bradykinesia, tremor, rigidity and later postural instability. PD is also associated with non-motor symptoms viz. sleep disorders, depression and cognitive changes, which may precede motor symptoms by more than a decade. Parkinson's disease was first described by Dr. James Parkinson in a book entitled "An essay on the Shaking Palsy", published in 1817<sup>1</sup>. It is sometimes called idiopathic Parkinsonism (which means that the cause is unknown). 6.3 million people worldwide suffer from Parkinson's disease. It is the 2<sup>nd</sup> most prevalent neurodegenerative disorder after Alzheimer's disease affecting 1% of those over 65 years and 1% to 3% of those over 80 in age.<sup>2</sup> The incidence has been estimated to be 4.5-21 cases per 1,00,000 population per year. Parkinson's disease is comparable to *Kampavata*, which is categorised among *nanatmaja* disorder of *Vata*. *Kampa* is a cardinal feature of *Kampavata*, Increased movements are denoted as *Vepathu*<sup>3</sup>, *Spandana*, *Sphurana* etc. as mentioned in *Ayurvedic texts*. Because of its crippling nature and non-availability of curative treatment, Parkinson's disease (*Kampavata*) has remained a great problem in an ageing society. *Ayurveda* takes a unique approach to the management of neuropathies with a special emphasis on eliminating their cause by *Panchakarma*. *Panchakarma* procedures are especially advocated in the treatment of neurological diseases like *Kampavata*. Different types of *Snehana*, *Swedana* are efficacious. Besides a special treatment like *Shirobasti*, *Shirodhara*, *Nasya*, *Virechana* and *Basti karma* are explained in such disease. Here, an attempt has been made to understand the etiopathogenesis, clinical features, prognosis of the disease from an *Ayurvedic* perspective and devise the

*Panchakarma* treatment modalities which may reverse the degenerative process in future.

## ETYMOLOGY AND DEFINITION

*Kampavata* comprises two words. *Kampa* and *Vata*. *Kampa* is derived from the root *Kapi* and suffixed by *Ghana*, which means to move or to shake and *Vata* is derived from the root *Va* and suffixed by *Ktha*. *Va Gatigandhnayoho*<sup>4</sup>, *Gati* and *Gandha* are the two main functions of *Vata*. All the motor and sensory functions are governed by *Vata*. By this *Kampavata* can be defined as one of the disorders of impaired *Vata* which has cardinal signs of *Kampa*.

## ETIOPATHOGENESIS

### In the conventional system of medicine

In PD, there is a loss of Dopaminergic neurons in the substantia nigra pars compacta in the midbrain and locus ceruleus in the pons with subsequent loss of dopamine in the nigrostriatal pathway and the presence of, intracytoplasmic eosino-philic inclusion bodies termed Lewy bodies in the surviving neurons. In addition, there is marked loss of non-dopaminergic neurons, particularly in the caudal brainstem and these may become involved even before the dopaminergic neurons<sup>5</sup>. There is growing consensus among parkinsonologist that PD is not a homogenous disease but a syndrome of different disorders, caused by genetic, environmental and other factors. Although the mechanism of neurodegeneration in PD is not clear, multifactorial causes representing different, although possibly converging pathways have been proposed. The pathogenesis of PD has been postulated to result from a complex interaction between environmental and genetic factors leading to mitochondrial dysfunction, oxidative stress, inflammation and excitotoxicity eventually leading to nigral dopaminergic neurons degeneration.

### In the Ayurveda system of medicine

In *Ayurveda*, no specific structural pathology of *Kampavata* is described other than its identification as *Vata dosha* disease. Hence *Samprapti of Vata vyadhi* has to be considered here. It has been mentioned that

provocation of *Vata* may take place either due to diminution of body element (*Dhatukshaya*) or due to obstruction in the body channels (*Avarana*).<sup>6</sup> As a result of *Margavarana* by *Kapha*, and *Pitta dosha* in *Shiras*, *Shiro marma* is deprived of *Rasa Raktadi dhatus*. This *Dhatukshaya* in turn provokes the *Vata dosha* and different *lakshanas* of *Shiromarma abhighata* may manifest.

### CLINICAL SIGN & SYMPTOMS

The majority of symptoms of *Kampavata* are also mentioned in different *Avarana*, *Charaka* says that *Avarana* of *Vyana* and *Udana* by *Kapha* produces symptoms like *Gati sanga*, *Vakswaragraha*, *Gurugatrata*, *Stambha*, and *Kampana*<sup>7</sup>. A more detailed diagnostic approach with illustration for the first time provided by the *Basavarajeeyam* with explaining the motor symptoms of *Kampavata*, viz *Karapadatale kampa* (tremors in hands and legs), *Dehabhramana* (Postural instability) and non-motor symptoms viz. *Matiksheena* (dementia), *Nidrabhanga* (insomnia)<sup>8</sup>,

There are four cardinal motor symptoms of Parkinson's disease which include tremor, rigidity, bradykinesia or postural instability (jankovic, 2008). other motor features of the disease include gait disturbance such as shuffling, freezing, festination (an involuntary quickening of gait), Scoliosis and dystonia (Giladi et al, 2001; Schaafsma et al., 2003) These tend to Progressively deteriorate as the disease state advances. Other non-motor Complications associated with Parkinson's disease include speech and swallowing disturbance, sleep, and perception disarrangement, autonomic gastro-intestinal and neuro ophthalmological dysfunction, depression, dystonia and dementia (Chaudhary et al., 2006)

### DIAGNOSIS

- There is no definitive diagnostic test to confirm Parkinson's disease (*Kampavata*). The diagnosis is based on medical history, a review of signs and symptoms and a neurological and physical examination. The four cardinal features are grouped under the acronym TRAP: Tremor at rest (*Kampa*), Rigidity (*Stambha*), Akinesia or bradykinesia (*Gatisanga*) and Postural instability

(*Dehabhramana*), are strongly suggestive of Parkinson's disease.

- If clinical features are not strictly within the syndrome or if the disease occurs in earlier life, Wilson's disease will have to be ruled out by estimating serum copper, ceruloplasmin and urinary copper levels.
- Symptoms that suggest a diagnosis other than Parkinson's disease include lack of response to levodopa, hallucinations, prominent and early dementia, early postural instability, severe and early autonomic dysfunction, upward gaze paralysis and involuntary movements other than tremors. CT scan and MRI is required if these additional signs are present.
- PET and SPECT when available, will show a decreased uptake in the striatum in patient with PD<sup>9</sup>.

### PROGNOSIS

In *Ayurveda*, the prognosis of *Kampavata* is not specifically given. Most *Vata* diseases are not curable, but the patient may be able to live with the disease in a certain degree of inconvenience and difficulties. As the disease progresses, patients develop rigidity and can't take care of themselves. With advancing disease patient assumes fixed flexed postures, remains curled in bed unable to move. Death may occur due to infection bronchopneumonia and septicemia<sup>10</sup>. *Ayurvedic* therapies available can make life much easier and increase life expectancy.

### TREATMENT

*Ayurveda* takes a unique approach to the management of the above-mentioned neuropathies with a special emphasis on eliminating their causes by *Panchakarma*. *Kampavata* is a *Vataja vyadhi*. *Vatavyadhi* condition can be divided into two types i.e., *Dhatukshayajanya* and *Margavarodhajanya* disease. One reason that *Kampavata* is classified as a very difficult disease to cure is because it can involve both of these underlying pathologies. Chakradutta<sup>11</sup> has explained the treatment of *Avruta Vata*. In case of covering, first of all, the active agent should be overcome and then the *vata* alleviating treatment should be given. *Panchakarma* exists and is designed

expressly for this purpose. Depending upon the Presence of relative *Margavarodhajanya avastha* (Obstructive condition) component, the degree of *Kapha dosha*, and the presence of *Ama*, the following approaches can be adopted.

- Complete purification and removal of toxic substances from all the *Dhatus* (tissues).
  - Correcting the direction of flow of *Vata*
- Deepana Pachana*, *Virechana karma* and *Nasya karma*, can be adopted for this purpose.

#### **Deepana Pachana**

*Sanjeevani vati* (250mg-500 mg TID before food)

*Agnitundi vati* (250mg -500mg TID before food)

*Hingvashtaka churna* (3gm TID) can be given till *nirama lakshanas*<sup>12</sup>

#### **Virechana**

*Mridu virechana* with medicated ghee prepared by boiling either with *Tilvak* or *Saptala* or *Eranda taila* with milk can be given in all sorts of *Vata vyadhi*<sup>13</sup> including *Kampavata*.

#### **Nasya Karma**

*Navana nasya*<sup>14</sup> (instilling the drop of medicated oil or *ghritha*) can be used in *Kampavata* which is suitable in both *Margavarana* and *Dhatukshaya* conditions by its properties of *Shodhana* and *Snehana*. Initially, *Shodhana nasya* is administered by instilling the drop of oil is prepared with *Shirovirechanik drugs* like *Pippli*, *Shigru* etc, which eliminates morbid *Doshas* and helps in removing the *Margavarana* followed by *Snehana nasya* can be administered to strengthen the *Dhatus*. *Brimhana nasya* with *Purana ghritha* *Narayana taila*, *Ksheerbala taila*, *Mashadi kwatha nasya* can be given. The procedure may be conducted

on alternative days or once in 3 days for about 7 to 21 days or even until the result is got. In *Vata vyadhi* daily 2 times *Nasya* can be given.<sup>15</sup>

In *Dhatukshaya janya* condition of *Kampavata* the weakening and reduction in *Majja dhatu* result in *Srotasa* composing that tissue to become empty. The vacuum is filled with *Vata dosha* leading to *Vata vyadhi*. The treatment of *Dhatukshaya janya* condition boil down following approaches.

- Controlling vitiation of *Vata dosha*.
- Correcting the destruction of involved *Dhatus*.

Because the chief *dosha* is *vata* which has *guans* of *Ruksha*, *Sheeta*, *Laghu*, *Khara*, *Shukshma*, *Chala* and *Parusha*. It is treated with the opposite properties *Snigdha*, *Ushna*, *Guru*, *Slakshna*, *Sthoola*, *Sthira*, and *Komal*. These qualities are perfectly present in fats and oils. Thus, the most important *Upakrama* for *Kampavata* is *Snehana* (oleation) then *Swedana* and *Basti*.

#### **Snehana**

*Snehana* can be given in both internal administration and external application

1. Internal administration as

#### **Snehapana**

*Ghritha* prepared by *Anupa mamsa*, *Dashmoola*, *Shatavari*, *Kulatha*, *Badara*, *Masha*, *Tila*, *Rasna Yava*, *Bala*, should be cooked by adding *Vasa*, *Dadhi* and *Amla*.<sup>16</sup>

2. External application as

#### **Sarvanga Abhyanga**

*Sarvanga Abhyanga* should be performed daily<sup>17</sup> with *Taila* prepared by using *Vata shamaka* specific drugs decoction.

The following *Taila* can be used for external and internal applications.

S.N.	Medicated oil	Uses	Indication	References
1	<i>Dhanwantara Taila</i>	<i>Abhyanga</i>	<i>Cures Kampa, Akshepa, all types of Vataja rogas</i>	<i>Sahasrayoga Taila Prakarana P.No.74</i>
2	<i>Narayana Taila</i>	<i>Abhyanga</i>	It cures all types of <i>Vataja Rogas</i>	<i>Yoga Ratnakara Vatavyadhi Chikitsa 267-77, PN.425</i>
3	<i>Sahachara Taila</i>	<i>Pana, Abhyanga</i>	<i>Kampa, Akshepa Stambha, Shosha, Vataja rogas</i>	<i>Ch.Sam.Chi 28/143-145,PN-757</i>
4	<i>Masha Taila</i>	<i>Pana, Abhyanga, Basti, Nasya</i>	<i>Hastakampa, Shirokampa, Bahukampa,</i>	<i>Yog Ratnakara Vatavyadhi Chikitsa, 342-357 PN-433</i>

5	<i>Ksheerbala Taila</i>	<i>Abhyanga</i>	<i>Rasayanam (rejuvenator), Vatasruk, Neurological disorders, good for sense organs.</i>	<i>Sahasra yoga Taila prakaran PN-75</i>
6	<i>Sukumara Taila</i>		<i>Sarvanga Vata, Ekanga Vata, Vepathu, Akshepaka</i>	<i>Ch Chi 29/129-134, PN-753</i>

**Shirobati**

*Shiro bati* with medicated oils (*Ksheerbala taila, Mahamasha taila, Mahanarayana taila*) daily 45 minutes for 7 to 14 days can be advised.

**Shirodhara**

Pouring of medicated oil/*ghritha/ kashaya* in the form of *dhara* over the center of frontal head such as *Jyotishmati taila, Bramhi taila, Medhya kashaya* etc.

**Shiropichu**

*Shiropichu* is considered as one among 4 procedures of *Mashtikya* where medicated oil, ghee are poured on a cotton pad/cloth and kept overhead after covering with leaf. It will be tied with a cloth and kept for a whole night.

**Swedana**

In the context of *Vata vyadhi Swedana karma* like *Nadi sweda, Pinda sweda* e.g., *Shastikashali or Patrapinda sweda* and *Avagaha Sweda* can be done.<sup>18</sup>

**Basti**

*Basti* is one of the most practiced therapeutic procedures for Neurological disorders. Mainly three types of *Bastis* can be administered: -

*Niruha Basti –Mustadi yapana basti, Kappikachhu yapana basti, Madu tailika basti*

*Anuvasana Basti-Guduchyadi tail, Sahacharadi tail, Mahamasha taila, Narayana taila* etc. can be used

By considering the patient's pathological condition this *bastis* can be formulated and planned in different schedules like *Karma, Kala* and *Yoga* pattern

*Matra Basti* with *Mahamasha tail* 75 ml with *Saidhava lavana* and *Shatpushpa* daily for 15 to 21 days can be given

**DISCUSSION**

**Deepana Pachana:** The status of *Agni* is of prime importance in the *Panchakarma* therapies. The *Jatharagni* function is not so strong in Parkinson's disease patients to support such a heavy regimen. If the

patient exhibits significant *Ama* stat in the body, there is a need for correction of *Agnimandhya* by *Deepana* and *Pachana* regimens for the promotion of *Agni* and digestion of *Ama*. If the metabolism is not appropriate, then all the efforts for therapy go in vain.

**Virechana:** Morbid *Doshas* accumulated in *Srotasa*, which obstruct the movement of *Vata* is getting too relieved and help in proper function of *Vata Dosh*. In *Vata Vyadhi* like *Kampavata, Mridu shodhana* is indicated, *Virechana karma* clears *Margavrodha* by eliminating the morbid *Dosha* and regulating the activity and movement of *Vata dosha*. *Virechana* evacuates all morbid *Doshas* from all micros to macro channels and regulates *Vata*.

**Nasya Karma:** The “*Nasa Hi Shirso dvaram*” that is, the nose has been stated by *Acharyas Vagbhata* as the simplest and closest opening to the cranial cavity to express the potency of drugs. All the *Indriyas, Indrayavahi* and *Pranavaha srotasa* depend on the *Shiras* for their functions and all the senses organs and the channels carrying the sensory and vital impulses from the *Shiras* are like the rays from the sun<sup>19</sup> The nasal delivery seems to be a favorable way to bypass the obstacles for blood-brain barrier allowing the direct drug delivery in the BioPhase of the central nervous system (CNS) active compounds.<sup>20</sup> Therefore it gives a significant improvement in short duration. *Navana nasya* is only indicated in *Shirogata vyadhis* and *Vata vyadhis*. (Nervous system disorders). The nature of the used drug finally decides the action of the drug in *Nasya karma* like it would be *Rechana* (elimination of dosha), *Tarpana* (for the nourishment of *dhatu*s) or *Shamana* (decrease the enhanced *dosha*). In the context of *Vata vyadhi* like *Kampavata Katu dravya* installation in form of *taila* will shed of *Avarana* (obstruction due to vitiated *kapha*) and re-established the flow of *vata*. Use of *Sheeta, Madhura* dravyas as in form of milk, *ghritha*, extract juice will

provide a soothing effect and nourishes the *avayas* and enhance the power of their normal function.

**Snehana:** Acharya Charaka opine that *Sneha* is the first line of treatment of all the *Vata vyadhi*. *Snehana* does *Agnivardhana*, *Balavardhana*, *Dridhyaindriya* (strengthens the sense organs), delays ageing and nourishes *Shushka dhatus*. By properties of *Snigdhtwa*, *Shlakshntwa* and *Mriduta Snehana* corrects *Rukshata*, *Kharata*, *Parushtwa* and decreases accumulated *Vata*.

**Probable mode of action of Snehapana:** The *Sneha* is metabolized in the GIT and is converted into fatty acid and glycerol. The resultant lipoprotein is circulated throughout the blood. It crosses the blood-brain barrier, reaching the neurons. Lipoproteins react with the cell membrane, and it induces a free radical chain reaction inside the cells. As the *Snehana* continued, the collision of the free radicals with the lipoprotein occurs resulting in the termination of the free radical chain reaction. *Snehana* helps in the building up of excretable metabolic waste. Also, at the time *Snehana* enhances cellular excretion. The *Shamana matra* of *Snehana* helps in stimulating and enhancing the secretion of elements and also controls the phenomenon of blebbing. So, the neurons in the process of degeneration can be revived and thus help in stimulating the pigmented neurons or dopaminergic neurons at different sites of the brain especially substantia nigra for the secretion of dopamine. In the *Ayurvedic* perspective, it is because of the relation between the *Pittadhara Kala* (a kind of layer in the body) and *Majjadhara Kala* in its direct mode of action.<sup>21</sup>

**Sarvanga Abhyanga:** *Abhyanga* has *Vatahara* and *Shramahara* effect. Parkinson's disease is a kind of *Jara vyadhi*, so this can be appreciated through *Abhyanga* and using of *taila* are beneficial in *Mardavakara* (softness of body), controlling or regulating the function *Vata* and *Kapha* and promoting *Dhatus*. By the *Abhyanga* the nervous system gets stimulated, thus providing stimulation to the muscular system, vessels and gland governed by the particular nerve and keeps the human body healthy. The warm oil stimulates the *Swedavaha srotasa* (perspiring body

channels) thus causing dilatation of the blood vessels thereby increasing blood circulation, thus relieving pain, stiffness and contraction of vessels.

**Shirobasti:** It is beneficial in *vata* disorder. It promotes sleep and calms the mind. It nourishes the brain. Thus, the role of *Shirobasti* is crucial in the management of *Kampavata* (Parkinson's disease). Acharya *Shardangdhara* mentioned that *Shirobasti* for seven days will cure even dreadful *vata* disorders and *Shirokampa*.

**Shirodhara:** *Shirodhara* with *Tila taila* has been found to have anxiolytic and tranquillizing effects result in a kind of relaxation effect. It calms down the hyper action of vitiated *Yana vata*. *Shirodhara* showed significant improvement in *Kampa*.

**Shiropichu:** In the external application of *Shiropichu* the potency of the drug may enter the brain and help to control *vata*, relaxing and revitalizing the central nervous system.

**Swedana:** *Swedana* has the inherent property of decreasing the *Gaurav* and *Stambha* (Rigidity) by pacifying *Vata dosha*. *Swedana* is useful in conditions like *Samkocha*, *Ayama*, *Shoola*, *Stambha*, which are the common symptoms seen in *Kampavata*. *Swedana* also increases the *Dhatvagni* level, thus digesting *Ama dosha*. *Swedana* increases blood circulation to the affected area correct *dosha* imbalances, strengthens the muscles and improves the tissue capacity within the body.

**Basti:** *Kampavata* has mentioned under one of the *Vata nanatmaja vyadhi*. *Basti* is considered the best procedure for *Vatavyadhi*. The site of action of *basti* is *Pakwashaya*. It is the main site of *Vata dosha*. Hence, *Basti* is mainly useful for the treatment of vitiated *Vata*. *Anuvasana* and *Niruha basti* is mentioned in all *Tridosha*, but it is specially indicated for *Vata vikaras*. Effect of *basti* is not merely limited upto the rectum and *Samshodhana of Malas*, it helps to improve regeneration of nerves and functioning of neural system. *Anuvasana Basti* nourishes all the channels after reaching the *Nabhi*, *Basti* can go deep into GIT and produces widespread effects. The proper volume of *basti dravya* produces a mechanical pressure effect and help in various mobility disorders. In *Niruha basti*,

*basti dravya* become a hypertonic solution due to its ingredients like *Madhu, Saindhava, Kalka, Kashaya* introduced into the body through the anus, get absorbed by intestinal epithelial cells by the process of osmosis, throws out *doshas* from the body.

**Probable Mode of Action Basti:** *Basti* is given in the *Pakwashaya* (Rectum and Colon) its active ingredients i.e., "*Virya of Basti*" spread in the entire body to get the desired action. *Basti Virya* may act through the enteric nervous system (ENS). The receptors of the ENS stimulate the CNS causing the secretion of required hormones or other chemicals. Hence the effect of *Basti* may also be associated with "Touch & Go Theory" causing activation of ENS receptors. It is recognized that the ENS has a unique ability to mediate reflex activity independently of input from the brain or spinal cord<sup>22</sup>. This ability implies that the ENS contains sensory receptors, primary afferent neurons, interneurons and motor neurons. The events that are controlled, at least in a part, by the ENS are multiple and include motor activity, secretion, absorption, blood flow and interaction with other organs such as the gall bladder or pancreas<sup>23</sup>. The extensive regulatory activities of the ENS are made possible by the presence and abundance of different types of neurons within the wall of the gastrointestinal tract. Morphological, electrophysiological and pharmacological studies have revealed a substantial diversity of neurons within the ENS<sup>24</sup>. It produces a wide range of hormones and around 40 neurotransmitters of the same class as those found in the brain. Neurons in the gut are thought to generate as much dopamine as those in the head<sup>25</sup>.

## CONCLUSION

Parkinson's disease is well described in *Ayurveda* text. The etiological factors, Symptoms, pathogenesis and treatment are well documented in ancient knowledge. *Panchakarma* therapy is a very imperative and essential part of *Ayurvedic* treatment and Parkinson's disease can be lessened with early *Panchakarma* therapy as gains are made in musculoskeletal flexibility, alignment and functional movement. Periodical treatment of *Panchakarma* therapy can

postpone the progression of degeneration in Parkinson's disease. Patients with Parkinson's disease may often turn to *Panchakarma* therapy with the hope of improvement of their quality of life.

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