AYURVEDIC PATHOPHYSIOLOGY OF PARKINSON'S DISEASE
(KAMPVATA)

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ABSTRACT

Ayurveda is the everlasting supreme science of medicine because it deals with all aspects of life, particularly of human being since time immemorial. The Parkinson’s disease (Kampavata) is a progressive neurodegenerative disorder. The disease affects approximately 2 out of 1000 people, and most often develops after age of fifty, the clinical course is chronic and progressive with severe disability attained after approximately ten years. According to Ayurveda, Kampavata is a Nanatmaja disorder of Vata. The Parkinson’s disease (Kampavata) is a slowly progressive disease of late adult life and is one of the most prevalent neurological disorders. There is no cure for Parkinson's disease, but medications, surgery and multidisciplinary management can provide relief from the symptoms. For the treatment of PD there are several drugs using in modern medicinal system but only L Dopa has better result similarly several Ayurvedic drugs which has similar compounds are useful in this grave disease. Present manuscript makes for the complete knowledge about the Parkinson’s disease (Kampavata) by the main headings like etiopathogenesis, characteristic features along with different remedies for the cure of these ailments.

KEYWORDS: Kampavata, Parkinson’s Diseases, Ayurvedic Treatment.

INTRODUCTION

Parkinson's disease (PD) is an age-related neurodegenerative disorder with progressive degradation of dopamine production in substantia nigra. The bradykinesia (especially having
difficulties in initiating movement), hypokinesia (lose of facial expression), rigidity, rest
tremor (pill-rolling movement of the forearm) and non-motor features including depression,
psychosis autonomic dysfunction are common clinical manifestation.\cite{1} Parkinson's disease
known as Kampavata in Ayurveda is a slow progressive neurological disorder of late adult
life and is fourth most prevalent neurological disorders found in elderly. This disorder affects
1% of the population over the age of 65 and is associated with degeneration in dopaminergic
nigro striatal neurons. It is reported that 60-80% dopaminergic neurons are lost before the
motor signs of PD occurs. Because of its crippling nature and non-availability of curative
treatment, this disease has remained a great problem in the ageing society.

The incidence has been estimated to be 4.5-21 cases per 1,00,000 population per year. Its
prevalence increases from 1% in people over the age of 65 years to 5% in people over the age
of 80 years and affects men and women equally.\cite{2} In Western medical world the diseases was
first described in 175 AD by physician Galen under the name “Shaking Palsy” and then in
1819 James Parkinson gave a detailed description of the disease and then after disease is
named after him.\cite{3}

**Parkinson's disease in Ayurveda literature**

According to Ayurveda most of the diseases of vata are degenerative disorders of nervous
system. 80 types of vatic disorders are described in Ayurveda texts. The Parkinson’s disease
is comparable to Kampavata, which is categorised among nanatmaja disorders of Vata. No
standard criteria exist for diagnosis of Parkinson's disease. Parkinson's disease is a most
common extra-pyramidal degenerative disorder. There are many manifestations
of Parkinson's disease but the classical diagnostic symptoms are: Slowness and poverty of
movement, Stiffness, Shaking. The major symptoms of PD are related to deficiency of
dopamine. The physical signs of Parkinson's disease include:\cite{4,5,6,7}

- Slowness of movement (bradykinesia) or Poverty of movement (hypokinesia), eg loss of
  facial expression and arm swing, difficulty with fine movements
- Rigidity
- Rest tremor

Depression, emotional changes, difficulty in swallowing and chewing, speech changes,
urinary problems, muscle cramps, dystonia, pain, fatigue, loss of energy are also the
presenting clinical features of PD.\cite{8}
In Charaka Samhita, Vepathu has been considered under Nanatmaja disorder of Vata.\cite{9} Many other references regarding the Kampa are available in the name of Vepathu, Vepana, Prevepana. The main symptoms of the disease viz. Kampa (tremor) and Stambha are found in some pathological conditions of Vata Vyadhi. The decreased Vata affecting the Marma cause Vepana.\cite{10} This concept provides understanding for the pathology of tremors relating to brain (Marma). Charaka included Stambha in symptoms of vitiated Vata and explained that Stambha is a disorder of Snayu. Charaka mentions that the conditions where Pitta is decreased and Kapha and Vata are increased then they produce symptoms like Kampa and Stambha.\cite{11}

The majority of symptoms of Kampavata are also mentioned in different Avaranas, Charaka says that Avarana of Vyana and Udana by Kapha produces symptoms like Gatisanga, Vakswaragraha, Gurugatrata, Stambhana and Kampanam.\cite{12} In Shirahkampa\cite{13} has been considered as one of the most important disease of Shirah and Nasya has been advocated for its cure. Acharya Charaka noted tremors in different organs like head.\cite{14} Maharshi Sushruta mentioned the symptoms Stambha and Kampa are mentioned in “Snayu Prapta Vata”.\cite{15} Vepathu is also a long term complication of Dusivisha. Excessive use of Katu, Tikta Rasa and trauma in Pranavaha Srotasa can also produce the similar symptoms.\cite{16} Ashtanga Sangraha mentions Kayasya Vepathu as symptom of ageing\cite{17,18} and Kampa is noted in Raktakshaya, Pittakshaya and Kaphakshaya condition\cite{19}. Acharya Madhavakara for the first time expounded the disease Vepathu in Vatavyadhi chapter which is characterized by Sarvanga Kampa (tremors all over body) and Shirokampa (tremors in head). The commentator Vijayarakshita has further illustrated that in Shirokampa, tremors of limbs may also be included. This indicates the cardinal clinical picture of Kampavata (parkinsonism) are well documented in Ayurveda though in the scattered form.

**Aetiology ( Nidana ) of Parkinson's disease**

Although aetiology of the disease not well known. PD is believed to be due to a combination of genetic and environmental factors. The factors as accelerated ageing, neurodegenerative changes, increased free radical and iron content in the Substantia Nigra repeated head injury, environmental factors as pesticides, contribute in the pathogenesis of this disease. In Ayurveda Kampavata is described as a Vataja disorder, so the causative factors of Vata Vyadhi can be considered as etiological factors of Kampavata. They are reviewed and reclassified as.\cite{20,21,22}
• Aharaja (Dietetic factors) Rukshanna (Ununctuous diet), Laghvana (Light diet), Kashayanna (Astringent taste), Katvanna (Acrid taste), Tiktanna (Bitter taste), Abhojana (starvation), Alpasana, Pramitasana (less quantity food).
• Viharaja (Regimen factors) Atilanghana (Leaping over ditch), Atipradhavana (Excessive running), Atiprajagara (Excessive awakening), Ativyavaya (Excessive sexual intercourse), Ativyayama (Violent exercise).
• Manasika (Psychological factors) Bhaya (Fear), Chinta (Thinking), Shoka (Grief), Utkantha (Anxiety).
• Miscellaneous factors Abhighata (Trauma), Ama (Undigested article), Asrika Kshaya (Loss of blood), Dhatukshaya (Loss of body elements) Atiyoga of Stambhana and complication of Vamana Karma, symptom or complication of Vataja Ardita (B.P.Vatavyadhi). Dalhana Mentions Kampa as Kalabalapravritta disease[23] which signifies age related pathology of disease. Vagbhata observes tremor and flexion posture as symptoms of aging.[24] Vepathu is the symptom of second Vishavega.[25] Poisoning due to Kalakuta nad Mustkaa manifest as Gatrastambha or rigidity and Vepathu or tremor.[26] Vepathu is a long term complication of Dushivisha.[27]
• The drugs like phenothizine (chlorpromazine), butyrophenones (haloperidol), Rauwlfia alkaloids (reserpine), tetrabenzene, procaine cause reversible Parkinsonism. They all can be included in Ayurvedic concept of Visha. The dietary factors responsible for disease relates to undernourishment, elderly persons are frequently devoid of essential dietary factors both in terms of macro and micronutrients especially vitamin B 12, B6, folic acid and Omega 3 fatty acids. Researches have proved the relation of dietary deficiencies and hyperhomocysteine, a mitochondrial poison responsible for increased risk for Parkinson's disease. Schwab et al. 1950 propounded the concept of stress as crucial trigger for initiation of disease and suggested that chronic anxiety might conceivably cause irreversible change to nerve cells in brain. Parkinson’s patients show high incidence of moral rigidity and mild obsessional personality traits. So it is concluded that Ayurvedist reached near to the understanding of etiology of Kampavata (Parkinson's disease).

Symptoms of Parkinson's disease in Ayurveda
The main clinical presentations in Parkinsonism are bradykinesia, tremor and rigidity and postural instability. In Ayurvedic classics, the diseases mentioned in a similar fashion are shirakampa, kampavatha and vepathu. The symptoms of PD according to aetiopathogenic mechanisms of Ayurveda is discussed for better understanding of the disease.
• **Kampa** is described as *Venpanam Ekdeshe Vyakta Kampanam*\(^{28}\). Kampa is a disorder of Vyana vayu and the increase in its chala property results in Kampa. Caraka mentions that, in condition where Pitta and Kapha are in stage of diminution, the increased Vata affecting the Marma (Vital parts) does away with consciousness and causes trembling in the patients\(^{29}\). This concept provides a base for understanding pathology of tremor relating to brain. Onset of Parkinson’s disease is typically asymmetric with the most common initial finding being an asymmetric rest tremor in an upper extremity. Often attributed to spontaneous oscillatory behavior of group of neurons within the CNS.

• **Chestasanga** (bradykinesia or akinesia) means hindrance or slowness in the movements. Vyana actually carries out all the movements, so it is direct cause for movement like Utkshepana, Apakshepana, Akunchana, Prasarana thus disturbance in the function of this Vayu leads to disordered movements. Kapha by its Manda, Guru Property causes slow all the movements' during the process of Avarana.\(^{30}\) Chestasanga has been described as symptom of Pittavritta Vyana\(^{31}\) when Vata and Pitta are in state of diminution, the Kapha obstructs the channels and give rise to loss of activity i.e. Chehtapranash. Trauma to Snayu can head to the proverty of movement\(^{32}\) while trauma to head can produce the symptoms like Chestanasha, Spandana.\(^{33}\) In Kampavata the functions of Prana, Vyana, Udana are impeded by Avarana of Kapha resulting in Cheshtasanga.

• **Stambha** means firmly fixed, rigid, stiffness. Spasticity (Stambha) is associated with stiffness (Sthairya) and coldness (Saitya) which are the attributes of Kapha. This implies the predominance of Kapha in the pathogenesis of this disease. Stambha is also a sign of Avarana of Vyana Vata in compassed by Kapha give rise to stiffness of the body (Stambha) mentioned in text.\(^{34}\)

**Pathophysiology of Parkinson's disease in Ayurveda**

Ayurveda as holistic system of medicine considers whole body physiology by explaining the physiology of body in terms of Tridosa(Vata, Pitta, Kapha), the three biofactors. The applied aspect considers Vata to represent neuroscience in Ayurveda. It has five major types or components- Prana, Udana, Samana and Apana responsible for neurophysiological functions in the body. Wide variety of etiological factors including tissue degeneration and damage (dhatu kshaya) and neuro obstructive diathesis(margavarana) disturb the equilibrium of Vata leading to development of 80 types of Vata disorders.
The eiopathogenesis of PD is not precisely known yet. Specific etiology of PD is related to aging and ageing related neurodegeneration related to oxidative and nitrosative street mediated free radicals. The brain is the most susceptible organ to oxidative damage. Reactive oxygen (ROS) and nitrogen species (RNS) activate brain’s resident immune cells, the microglia, which produce wide array of proinflammatory and neurotoxic including cytokines and eicosanoids that subsequently induce inflammation mediated death of dopamine containing neurons.\(^{[22]}\) The initial free radical mediated injury in the substantia nigra of the brain followed by programmed cell death may underlie the pathogenesis of Parkinson's disease. There is no specific genetic component involved in most of the cases except mutation in alpha synuclein in some cases of PD. Exposure to environmental chemicals causes damage to brain cells and basal ganglion.

In Ayurvedic classics, the etiological factors of Vata Vyadhi described. Parkinsons disease resembles kaphavritta vyana and udana in many stages of the disease. Chalatva is the karma of Vata. It is being normally contributed by the normalcy in gunas of Vata dosha such as rooksha, seetha, laghu etc. The fractions of Vata the cheshta and gati is the property of vyana vata\(^ {35}\). The bala is the contribution of Udana Vata.\(^ {36}\) In Parkinsonism, both the functions of Udana Vata and Vyana vata seems to be deranged. As for the status of doshas, it is concerned it is seen that for the symptoms of this disease to manifest, Vata is vridha or kupitha, Pitta is ksheena and Kapha is vridha and kupitha again. The dhatus, there is involvement of rasa ie. rasakshaya. The updhatus involved in the pathology are snayu and to an extend sira. Here, the avritha dosha is kapha and the avaraka are the udana vatha and vyana vatha.\(^ {37}\) Cheshtahani as well as gatisanga is the feature of kaphavritta vyana. Postural instability is also the manifestation of kaphavrita udana.\(^ {38}\) Vakgraha or dysarthria is seen in both kaphavrita vyana and udana. In the later stages of the Parkinson’s disease, higher mental functions, mainly memory is impaired and also cognitive and mood disturbances are on the rise. Here we can assume the involvement of prana vatha in the samprapthi in this stage.

**Management approaches**

**A. Prevention**

1. Balance diet is primarily recommendation. Use sali (old rice), godhuma (wheat), citrus fruit, vegetable, nuts, milk and milk products, dadima (pomegranate), nimbu (lemon), mango, orange, guava, apple, peach, garlic, asafoetida, sprout etc.
2. Avoid yava (barley), peas, puga (areca nut), jambu (jamun), excess protein diet, hot spicy food and incompatible food article
3. Practice regular aerobic exercises, yoga and meditation.
4. Judicious use of anti-psychotics or any other medication under close supervision of doctor.

B. Medical
Line of treatment Ayurvedic treatment for this condition centres around the treatment of vata disturbance.
1. Nidana parivarjana (avoidance of aetiological factors) - Modifiable causative factors like environmental toxins, drugs, head injuries, infections should be avoided.
2. Vangasena Samhita: For the first time stared the principles of the treatment of Kampavata. It has been asserted that, Abhyanga, Sweda, Nasya, Niroha, Anuvasana, Virechana and Shirobasti are the useful measures for the
   - Samsodhana chikitsa (Bio-cleansing therapies) followed by shamana chikitsa (Palliative therapy) should be advocated.
   - Snehana (Oleation): Gentle massage with medicated oils such as: Mahanarayan taila, Ksirabala taila, Sahacharadi taila, Dhanvantara taila, Mahamas taila, Bala taila
   - Sarvanga sveda (Steam bath) / Patrapinda sveda for 3-7 days.
   - Matra Vasti with Sahacaradi taila 50 ml with Saindhava lavan and Satpuspa daily for 15-21 days.
   - Nasya karma/ Brmhana nasya with Purana ghrita (old ghee)/ Narayan taila /Kshirbala taila Mashadi Kwatha Nasya 8-8 drops in both nostrils for 7 days.
   - Sirovasti with medicated oils (Kshirbala taila, Mahamas taila, Mahanarayan taila) daily 45 minutes for 7 days.
   - Sirodhara with medicated liquids (milk/water)/ oils (Kshirbala taila, Mahamas taila, Mahanarayan taila) daily 45 minutes for 7 days.

C. Drug therapy
- Kappikacchu beeja (Mucuna pruriens Linn ) 5-10 gm with milk
- Ashvagandha(Withania somnifera ) 3-5 gm with milk
- Brahmi (Bacopa monnieri )5-10 ml with water
- Parasika yavani (Hyoscyamus niger L.) 1-3 gm with warm water
- Bala (Sida cordifolia Linn.) 5 gm with Milk
• Rasona (Allium sativum Linn.) 30-50ml with water/milk

CONCLUSION
The review clearly indicates that PD is well described in Ayurveda texts. The etiological factors, symptoms, pathogenesis and treatment are well documented in ancient knowledge. The path physiology of PD in Ayurveda is has unique approach with concept of avarana of vata with Kapha Dosha. This review is an attempt to explain pathogenesis of PD on the basis of principles of Ayurveda for better diagnosis and management of PD.

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