



ISSN 2456-3110

Vol 4 · Issue 5

Sept-Oct 2019

Journal of **Ayurveda and Integrated Medical Sciences**

www.jaims.in

JAIMS

An International Journal for Researches in Ayurveda and Allied Sciences



Charaka
Publications

Indexed

The purview of Parkinsonism in Ayurveda

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ABSTRACT

Parkinsonism is a clinical syndrome in which the Parkinson's disease accounts for 80% of involvement. Parkinson's disease specifically refers to patients who have Parkinsonism, without any atypical features and who have essentially normal MRI that excludes other causes for their Parkinsonian symptoms. The main difference between the two are the effect of levodopa drug in Parkinson's disease and not the other. Parkinson's disease, which is the second most common neurodegenerative disorder after Alzheimer disease, occurs in approximately 1 in 1000 in the general population and in 1% of persons older than 65 years. Men are affected slightly more often than women (3:2). The cause of Parkinson's disease is believed to be a variable combination of poorly understood genetic and environmental factors. Hence treatment is often aimed at prevention of further complications and preserving the condition using general measures, drug therapy and surgery. In *Ayurveda*, giving importance to prevention of further derangement, *Lakshanika Chikitsa* is often attributed to the different stages of the disease. Parkinson's disease is generally understood as *Kampavata* in Ayurveda. But the development of the disease can be understood under various concepts of *Bahukampavata*, *Snayugatavata*, *Kaphavruta Vyanavata* and *Kampavata*. As Parkinsonism is widely treated with better efficacy in Ayurveda, hence it is the need of the hour to understand it in all its aspects with its relevant treatment. Hence the main aim of this article is to understand these varied concepts in possible correlation with the Parkinson's disease.

Key words: Parkinsonism, Baahukampavata, Snayugatavata, Kaphavruta Vyanavata, Kampavata.

INTRODUCTION

Parkinsonism is a clinical syndrome that consists of four cardinal signs: Tremor, Rigidity, Akinesia and Postural disturbances (TRAP).^[1] It is also called as the Shaking Palsy or Paralysis agitans. Parkinson's disease is a common cause of the TRAP syndrome, but there are numerous other causes which can be considered as the differential diagnosis. Parkinson's disease

accounts for 80% of Parkinsonism. Parkinson's disease specifically refers to patients who have Parkinsonism, without any atypical features and who have essentially normal MRI that excludes other causes for their Parkinsonian symptoms. The main difference between the two is the effect of levodopa drug in Parkinson's disease and not the other.

Parkinson disease, which is the second most common neurodegenerative disorder after Alzheimer disease, occurs in approximately 1 in 1000 in the general population and in 1% of persons older than 65 years. Men are affected slightly more often than women (3 : 2) and it is attributed to be because of a sex gene named SRY found only in males and produced by Substantia Nigra, the brain region affected by Parkinson's.^[2] It is suspected that the SRY gene serves as a protective agent.

Many of the features of Parkinson disease are due to loss of dopamine in the Neostriatum (especially the putamen) secondary to loss of pigmented

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Submission Date: 17/09/2019 Accepted Date: 22/10/2019

Access this article online

Quick Response Code



Website: www.jaims.in

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Ayurveda Organization, Vijayapur,
Karnataka (Regd) under the license CC-
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dopaminergic neurons in the Substantia Nigra cells of the midbrain. Approximately 60% of these dopaminergic neurons will have degenerated before clinical features of the disease develop.

Parkinsonism basically is of two types - Primary and Secondary. Primary Parkinsonism consists of Sporadic and Genetic. Sporadic is also called as Idiopathic and it usually occurs in late middle age and its incidence increases with age. Genetic involvement is often attributed to mutations in at least six genes, including alpha-synuclein, uclL1, LRRK2, parkin, PINK1, and DJ-1, are linked to Parkinson's disease.^[3] The younger the age of onset, the more likely the genetic involvement.

Atypical Parkinsonism is also called as Parkinsonism Plus Syndrome. These include Dementia with Lewy Bodies, Progressive Supranuclear Palsy, Multiple system atrophy and Corticobasal syndrome. Atypical Parkinsonian disorders are progressive diseases that present with some of the signs and symptoms of Parkinson's disease, but that generally do not respond well to drug treatment with levodopa. Atypical Parkinsonian disorders are not currently thought to be genetic. Most cases arise from unknown causes, though some may be associated with long-term drug exposure or trauma.

Secondary Parkinsonism (environmental etiology) include Drug induced (antipsychotics, reserpine, tetrabenazine), Infections (post encephalitic), Toxins (dieldrin, Carbon disulphide), Heavy metal (mercury, manganese), Head Trauma, Brain tumors and Liver failure.

Clinical Features

The main features are the TRAP as mentioned above. Other Motor features include micrographia, hypomimia, reduced eye blink, hypophonia, dysphagia and freezing. The cardinal features are;

- **Resting Tremors** which are 4-6 cycles per second, pill rolling in nature, disappears on voluntary movement and sleep.
- **Rigidity** is the increased muscle tone, on examination by passive movements. Cogwheel rigidity and leadpipe rigidity are the

two types identified with Parkinson's disease. Leadpipe rigidity is sustained resistance to passive movement throughout the whole range of motion, with no fluctuations. Cogwheel rigidity is the jerky resistance to passive movement as muscles tense and relax.

- **Bradykinesia** are the Slowness of movement with progressive loss of speed. Difficulty with planning, initiation and execution of movements
- **Postural Disturbances** include Stooped posture, Universal flexion, Shuffling gait and Freezing phenomenon.

The other non-motor symptoms include the neuropsychiatric symptoms like depression, anxiety disorders, apathy, the autonomic disturbances like Urinary dysfunction, constipation, the sensory symptoms like Pain, Restless syndrome, Olfactory dysfunction, the sleep disturbances like excessive day time drowsiness, changes in REM cycle and the cognitive impairment like dementia in 80% of pts after 20 years of disease.

Investigations include^[4] CT, MRI, PET and Transcranial Ultrasound to rule out other causes and to confirm the diagnosis. There are various criteria's and staging mentioned for different aspects of Parkinson's. Staging is usually done using Modified Hoehn and Yahr staging⁵. Complications include Frequent falls, Incapacitation, Depression and dementia, Postural hypotension, Urinary incontinence, Constipation, Aspiration. Treatment in Allopathic system of medicine is three fold: General measures includes physiotherapy, speech therapy and diet control. Drug therapy using drugs like levodopa, amantidine, bromocriptine, pramipexole, ropinerole, selegiline and bengtropine. Surgery includes deep brain stimulation, thalamotomy, pallidotomy and neural transplantation.

Ayurvedic understanding of Parkinsonism

The pathogenesis of neurological diseases involves the concept of *Dhatukshaya* and *Avarana*.^[6] Considering the *Lakshanas* exhibited in Parkinson's disease, in Ayurveda, we can consider *Baahukampa*

Vata,^[7] *Snayugata Vata*,^[8] *Kaphavrutavyana Vata*^[9] and *Kampavata*^[10] under the banner of Parkinson's disease.

Baahukampavata is mentioned in *Basavarajeeyam* as the tremors in one side of the arm, affecting the activities of the body and that which gives rise to various kinds of discomfort during the day and night. This can be correlated to the initial stages of Parkinson's disease where there is unilateral involvement along with axial involvement.

Snayugata Vata is defined in *Bhava Prakasha* as, When the deranged *Vatadosha* is situated in the tendons, there may be *Soola*, *Akshepaka*, *Kampa*, *Stambha*, *Anilaodbhava* (cramps, convulsions, tremors and muscular rigidity). To rectify this condition, *Swedana*, *Upanaha*, *Agnikarma* and *Bandhana* are suggested. This can be compared to the stages of development of the disease where there is bilateral involvement with recovery on Pull test. This verse could be interpreted as 1 or 2 sided as the treatment is not intended for *Bahudoshavasta*.

Kaphavruta Vyanavata explained in *Caraka Samhita* is understood as, if *Vyanavayu* is occluded by *Kapha*, then there will be heaviness all over the body, pain in all the joints and bones, and restricted movements or excessive loss of morbidity. This can be understood with reference to the pathology in Allopathic science. The prime pathology occurring in Parkinson's disease is that the substantia nigra pars compacta cells begin to die. These cells produce dopamine, which is a hormone and a neurotransmitter (chemical released by neurons to send signals to other cells). Dopamine brings about the movement, helps in memory, sleep, mood, pleasurable reward, behavior and cognition. The dopamine depletion blocks autoinhibition of acetylcholine release through muscarinic autoreceptors, leading to excessive acetylcholine release which eventually prunes spines of the indirect-pathway projection neurons of the striatum and thus interrupts information transfer from motor command centers in the cerebral cortex.^[11] In short, decrease in dopamine leads to an increase in acetylcholine i.e. they are inversely proportional in nature. Breakdown of acetylcholine-dopamine balance hampers proper

functioning of the cortico-basal ganglia-thalamocortical loop circuits. Acetylcholine is the neurotransmitter responsible for the muscles to contract, activates pain responses, regulates endocrine and REM sleep. Hence when the acetylcholine is increased, it leads to bradykinesia, rigidity, postural disturbances and tremors which are also explained by the *Acharya* as *Gatisanga* and *Adhika*.

Gatisanga: where there is obstruction to the normal function of *Vata*. This can be understood as bradykinesia, rigidity, postural disturbances and

Adhika: increased activity such as tremors can be considered here.

This can be understood under the concept of *Avarana* where there is hindrance to the path of *Vyanavata* by the *Kapha* leading to *Avarana*. Dopamine molecule is too polar to cross the blood brain barrier. Hence the treatment in such conditions is L-Dopa, a precursor of Dopamine which can enter the blood brain barrier effectively. Even in *Ayurveda*, *Avaranahara Chikitsa* is done initially with *Kapikachu* being the main drug of choice.

Kampavata is defined in *Basavarajeeyam* and this can be understood as the complete manifestation of the disease with the patient being bedridden or wheelchair bound and is physically dependant.

Nidana (Causative Factors)

The primary and secondary Parkinson's disease can be understood from the aspect of *Swatantra* and *Paratantra Vyadhis*. The causes of primary Parkinson's disease can be understood as *Swatantra* or *Anubandhya Vyadhi* though the causes state idiopathic. The Secondary Parkinson's disease which is caused due to secondary factors can be considered as *Paratantra* or *Anubandha Vyadhis* as the treatment involves treating the primary cause and not the secondary manifestations.

Chikitsa (Treatment aspects)

The main aim of any *Chikitsa* is to improve the "Quality of life" of an individual. WHO has defined "Quality of life" as "a broad ranging concept affected

in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment".^[12] In a patient of Parkinson's disease, the Sickness Impact Profile (SIP) and the Short-Form Health status survey (SF-36) are the most popular. Subjective factors in QoL in PD patients include perception of symptoms, level of fitness, self-image, satisfaction with family life, work, the economic situation, the interaction with other people, social support, and life in general. The objective factors include the clinical picture of disease, social status, social and living conditions and the number and intensity of social contacts. The scales used to assess the QoL in PD include either subjective or objective indicators, or both.

Depending on the *Avastha* of the disease and the cause involved, *Dhatushayajanya* or *Avaranachikitsa* can be undertaken.

Nirupahata Vatavyadhi Chikitsa explains that if the disease is of *Asamsrishta* or *Dhatukshayajanya* or *Anavrita* origin, the treatment includes^[13] *Snehana*, *Swedana*, *Anuvasanavasti*, *Nasya* and *Tarpanaahara*. *Snehana* can be *Bahya* or *Abhyantara*. *Snehana* acts as *Vishyandana*, *Mardavakara* and *Kleda Karaka*. Also it is *Vatahara* in action. *Swedana* does *Sthambanigraha*, *Srotoshuddhi*, *Gowravagna* and *Vatashamana*. *Vasti* helps in *Vatashamana*, *Agnivardhana*, *Manabuddhiindriyaprasadana*, *Ashyalaghutwa*, *Ruchikaraandprakrutisthapan*. *Nasya Karma* removes the accumulated *Dosha*. *Tarpanaahara* becomes beneficial due to the *Dhatukshayaavastha* in the body as *Brahmana* is the treatment of choice here. Repeated *Snehana* and *Swedana* should be done by which the *Koshta* becomes *Mrudu* and *Vatavyadhis* cannot recur. If the *Doshas* don't subside then *Mridusnigdha Virechana* should be done by *Snehapana* with *Tilwaka* or *Satalaghrita/ Taila* with milk. *Virechana* is done for *Arhas* where there is *Pitta* and *Kapha Pitta* involvement in the body. If the patient is too weak for *Virechana* then *Niruhabasti* should be done. *Niruhabasti* is done to remove *Tridoshas* especially *Vata*. It also provides *Balavridhi*, *Agnidipana*,

Rogashamana, removal of *Vit*, *Mala* and *Samiranatva*. In all conditions, *Nasya* and *Dhoomapana* should be given.

The aim of *Avarana Chikitsa*^[14] is to treat the patient with *Anabhisyadi* to clear the *Snigdha Srotas*, If *Vayu* is *Rudha* or blocked then *Vatanumola* which is not antagonistic to *Pitta* and *Kapha* should be done. *Yapanabasti* along with *Anuvasanabasti*. If the patient is strong, the *Mriduvirechana* is also explained. Usage of *Rasayanas* has been indicated.

The *Shamanoushadis* to be used also depend on the *Avasta* of the patient. Understanding the necessity of Dopamine in this condition gives *Kapikachu*, the most natural levodopa-containing drug, as the prime drug of choice in Parkinson's disease.

Kapikachu - The Natural Levodopa

Kapikachu (*Mucuna pruriens*) is the drug of choice in Parkinson's disease because of its natural Levodopa content. It is included under *Balya* and *Madhurasanda* in *Charaka Samhita*. The seeds are the main source as they contain up to 7% levodopa. It is also an aphrodisiac as it causes a rise in testosterone levels, increased muscle mass and strength, and also improves coordination and attention. Extract of *Mucuna* seed powder contains large amounts of levodopa and a little serotonin and nicotine along with other ingredients that are only partially known. In the treatment of Parkinson's disease, such extracts seem to be more effective and less toxic than the synthetic preparations.^[15] *Mucuna* increases the adaptation and regeneration of tissues in general and has been shown to increase growth hormone.^[16] It has an anabolic effect and increases muscle mass; it also has antioxidant properties and favors the protective functions of the liver.^[17] *Mucuna* contains prurienine which increases intestinal peristalsis and is a good remedy for constipation, so prevalent in Parkinson's disease patients. It usually enhances motility and gastric emptying. *Mucuna pruriens*, which contains natural levodopa and is tolerated better than the synthetic version.^[18]

The other formulations include *Dhanwantaram Kashayam* due to its *Vatanuloma*, *Brahmana*, *Nadi Kshobhahara* properties, *Ashtavargam Kashayam* for its *Vatakapha Shamana*, *Avarana Vatahara*, *Srotoshodana* and *Lekhana* properties, *Pancasakara Curna* for its *Vatanulomana*, *Vatakaphahara*, *Sulahara* properties, *Gorochanadi Gutika* for its *Tridoshagna*, *Prananulomana*, *Srotoshodana* and *Sukshma Srotogami* properties, *Shiva Gutika* for its *Tridoshahara*, *Prabhava* of *Rasayana* and *Dhatuviddhikara* properties, *Mahayogaraja Guggulu* for its *Yogavahitwa*, *Dhatuposhaka* and *Nadibalya* properties, *Trayodasanga Guggulu* for its *Dhatubalya*, *Vatahara* and *Pushtikara* properties, *Balarishta* for its *Balya*, *Brahmana* and *Dipana* properties, *Ashwagandhaarishta* for its *Balya*, *Dhatuposhana* and *Rasayana* properties, *Mahanarayana Taila* for its *Vatashamana*, *Sulahara* and *Balya* properties and *Dhanwantaramtaila* for its *Vatanuloma*, *Angamarda Prashamana*, *Balya* and *Brahmana* properties.

Rasayana which can be administered in Parkinson's disease include *Ashwagandhadhi Lehya*, *Brahma Rasayana*, *Chyavanaprasha*, *Dasamula Haritakilehya*, *Narasimha Rasayana*, *Nayopayam Lehya* etc.

DISCUSSION

Due to any of the *Nidana* mentioned for *Vatavyadhi*, the *Prakupitavata* leads to *Dhatukshaya* and manifests as *Ekabahukampa* which is often seen during the initial onset of Parkinson's disease. This can be understood as *Nidana* lead to *Vataprakopa* which accumulate in *Rikta Srotas* leading to the *Lakshanautpatti* of *Baahukampavata*.

Considering the *Lakshanas* of *Snayugatavata*, the probable *Samprapti* leading to Parkinson's disease would be that the *Nidana* lead to *Vataprakopa* which then moves to the *Snayusthana* up bringing the *Lakshana Utpatti* of *Snayugatavata*.

Avarana of *Vyanavata* by *Kapha* can be considered for the later stages where in there is marked postural instability along with weakness of body. Here, the *Nidana* assimilate to bring about *Vataprakopa* leading to *Udhirana* of *Pitta* and *Kapha* to various

Sthanas. This leads to the formation *Avarana* of *Vyanavata* by *Kapha*. This later leads to the *Rasadhidhatu Shoshana* and manifests as *Kaphavruta Vyanavata*.

The complete manifestation of Parkinson's disease is characterized by resting tremors along with being bed ridden or wheel chair bound. The *Kampavata Lakshanas* like *Kampa* all over the body leading to restless nights and making the person emaciated can be considered as the complete manifestation for Parkinson's disease.

Nidana leads to the *Dhatukshaya Avastha* wherein there is *Vataprakopa*. The *Vridhhi* involved here is that of *Vyanavata*. This circulates through *Rasayanis* leading to the manifestation of *Kampavata*.

CONCLUSION

Since the definite cause of Parkinson's disease is unknown, the treatment is often aimed at preventing further deterioration. In Ayurveda, the *Lakshanika Chikitsa* is usually adopted with respect to that of Parkinson's disease. Hence the relevant diagnosis, wherever possible should be made and the *Oushadi* and procedures which help in the same should be adopted, keeping in mind our limitations.

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How to cite this article: Dr. Shereen Sreenivas, Dr. Muralidhara, Dr. Sindhura A. S. The purview of Parkinsonism in Ayurveda. J Ayurveda Integr Med Sci 2019;5:249-254.

Source of Support: Nil, **Conflict of Interest:** None declared.
