



## Review Article

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### A REVIEW ON PARKINSONISM: AYURVEDA PERSPECTIVE

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#### ABSTRACT

Parkinsonism is a clinical syndrome that consists of four cardinal signs: Tremor, Rigidity, Akinesia and Postural disturbances (TRAP). 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 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.

**Keywords:** Parkinsonism, Baahukampavata, Snayugata Vata, Kampavata, Dopamine.

#### INTRODUCTION

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.<sup>1-2</sup>

#### Ayurvedic understanding of Parkinsonism

The pathogenesis of neurological diseases involves the concept of Dhatukshaya and Avarana.<sup>6</sup> Considering the Lakshanas exhibited in Parkinson's disease in Ayurveda. We can consider Baahukampa Vata,<sup>7</sup> Snayugata Vata,<sup>8</sup> Kaphavrutavyana Vata<sup>9</sup> and Kampavata<sup>10</sup> under the banner of v 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 Vata Dosha is situated in the tendons, there may be Shoola, Akshepaka, Kampa, Stambha, Anilaodbhava (cramps, convulsions, tremors and muscular rigidity).

#### Parkinsonism: A Syndrome

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 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
- 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, uchL1, LRRK2, parkin, PINK1, and DJ1, are linked to Parkinson's disease. 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 etymology) include Drug induced (antipsychotics, reserpine, tetrabenazine), Infections (post encephalitic), Toxins (dieldrin, Carbon disulphide), Heavy metal (mercury, manganese), Head Trauma, Brain tumours 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 lead pipe rigidity are the two types identified with Parkinson's disease. Lead pipe 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 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 staging.

### Complications

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 include physiotherapy, speech therapy and diet control. Drug therapy using drugs like levodopa, amantadine, bromocriptine, pramipexole, ropinirole, selegiline and bengtropine. Surgery includes deep brain stimulation, thalamotomy, pallidotomy and neural transplantation.

### A Treatment Ayurvedic point of view

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 Charaka Samhita is understood as, if Vyana Vayu 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.

### Role of Dopamine Ayurvedic point of view

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, behaviour and cognition. The dopamine depletion blocks autoinhibition of acetylcholine release through muscarinic auto receptors, 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 centres in the cerebral cortex.<sup>11</sup> 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 thalamo cortical 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 Vyana Vata 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. Kampa Vata is defined in Basavarajeyam and this can be understood as the complete manifestation of the disease with the patient being bedridden or wheel chair bound and is physically dependant. 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 feature as of their environment".<sup>12</sup> 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, Dhatukshayajanya or Avaranachikitsa can be undertaken. Nirupahata Vatavyadhi Chikitsa explains that if the disease is of Asamsrishta or Dhatukshayajanya or Anavrita origin, the treatment includes<sup>13</sup>Snehana, Swedana, Anuvasanavasti, Nasya and Tarpanaahara. Snehana can be Bahya or Abhyantara. Snehana acts as Vishyandana, Mardavakara (Increases softness & enhance mobility) and Kleda Karaka. Also it is Vatahara in action. Swedana does Stambha Nigraha, Srotoshuddhi, Gowravagna and Vata Shamana. Vasti helps in Vata Shamana (Subside Vata Dosh), Agni Vardhana (Catalytic), Mana-Buddhiindriya Prasadana, Ashyalaghutwa, Ruchikara and Prakrutisthapan (Establishing normalcy). Nasya Karma removes the accumulated Dosh. Tarpana Ahara 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 Vata Vyadhis cannot recur. If the Doshas don't subside then Mridu Snigdha Virechana should be done by Snehapana with Tilwaka or Satalaghrita /Taila with milk. Virechana is done for Pitta and Kapha Pitta involvement in the body. If the patient is too weak for Virechana then Niruha Basti should be done. Niruha Basti is done to remove Tridoshas especially Vata. It also provides Bala Vriddhi, Agni Dipana, Roga Shamana, removal of Vit (Urge of defecation), Mala and Samiranatva. In all conditions, Nasya and Dhoomapana should be given. The aim of Avarana Chikitsa is to treat the patient with Anabhishtandi to clear the Snigdha Srotas, If Vayu is Rudha or blocked then Vatanumola which is not antagonistic to Pitta and Kapha should be done. Yapana Basti along with Anuvasana Basti. If the patient is strong, the Mridu Virechana is also explained.

Usage of Rasayanas has been indicated. The Shamana Oushadis to be used also depend on the Avastha of the patient.

## 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 Lakshana Utpatti of Baahukampavata. Considering the Lakshanas of Snayugataavata, the probable Samprapti leading to Parkinson's disease would be that the Nidana lead to Vataprakopa which then moves to the Snayu Sthana up bringing the Lakshana Utpatti of Snayugataavata. Avarana of Vyana Vata 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 Udirana of Pitta and Kapha to various Sthanas. This leads to the formation Avarana of Vyana Vata by Kapha. This later leads to the Rasadi Dhatu Shoshana and manifests as Kaphavruta Vyana Vata. 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 (Tremor) 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 where in there is Vata Prakopa. The Vriddhi involved here is that of Vyana Vata. 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 should be made wherever possible. Oushadi and procedures which help in the same should be adopted.

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