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Case Study

MANAGEMENT OF RIGIDITY DOMINANT PARKINSON'S DISEASE THROUGH AYURVEDIC PROTOCOL

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ABSTRACT

Parkinson's Disease (PD) is a disease with insidious onset and slow progression. It is a neurologic condition that causes motor manifestations namely, bradykinesia, rigidity, resting tremor, postural instability and non-motor symptoms such as depression and dementia. The modern treatment provides some symptomatic relief but any proven means for slowing the progression have not been found yet. This case is of a 64-year-old male patient who presented with complaints of slowness in daily activities, difficulty in raising left upper arm along with heaviness, tremors in both hands, difficulty in speech and movement for 3 years. Complaints were increasing progressively hindering his routine activities. He underwent our IP management for 60 days with follow-up after every 20 days. In every follow-up, the patient reported significant relief in his symptoms and after two months, he was able to perform his routine activities without any help.

INTRODUCTION

Parkinson's disease is the second most common neurodegenerative disorder characterized by loss of dopaminergic neurons in the substantia nigra pars compacta and locus coeruleus[1]. It is included in ICD10, G20-G26 extra pyramidal movement disorders[2]. It is manifested by a combination of rigidity, bradykinesia, postural instability with or without resting tremor. Globally Parkinson's disease affects approximately 1% of those more than 55 years and the incidence doubles by the age of 65 years[3]. Direct reference of parkinsonian movement disorders in ancient Ayurvedic literature is sparse and refers only related symptoms such as *Kampa*, *Sthambha*, *Gatisanga*, *Chestasanga* etc. For treating numerous neurodegenerative disorders, nowadays clinicians depend upon the treatment principles of diseases mentioned under *Vatavyadhi prakarana* of classical texts. There is no precise treatment principle available for parkinsonian movement disorders in any Ayurvedic literature. Bhasavaraja the author of Bhasavarajeeyam coined the term *Kampavata* with features like *Karapadathala kampa*, *Deha bhramana*, *Matiksheena* and *Nidrabhanga*[4]. It is better to take such description as a condition seen among Parkinson's disease patients than to compare *Kampavata* with Parkinson's disease.

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Patient Information

A 64-year-old moderately built male patient retired as deputy superintendent (desk job), presented with complaints of slowness in daily activities, difficulty in raising left upper arm along with heaviness for the past three years. Tremors developed gradually that were aggravating at rest and subsiding during activities. He consulted a nearby modern hospital and was diagnosed with Parkinson's disease. They advised medicines for the same, which he is continuing even now. Gradually heaviness over upper limb and walking difficulty also developed. Recently he started experiencing night mares and increased anxiety which disturbs his night sleep. For the past one year, the patient noticed a tendency to fall forward while walking, difficulty in speech particularly during initiating sentences and expressing emotions, difficulty in raising left arm and holding objects etc.

His appetite and thirst were normal but he complained of hard stools with incomplete evacuation once in two days for past four years. He was also diagnosed with co-morbidities like diabetes mellitus and hypertension. He started to notice difficulty in

initiating day-to-day activities such as buttoning and unbuttoning, slowness in eating food, difficulty in holding objects and recollecting recent fact for the past five months. For this he consulted a neurologist and was prescribed medicines Tab. Gabapentin 100mg (0-0-1), Tab. Syndopa plus (1-0-1), Tab. Rasalect 0.5mg (1-0-1) Tab. Cilacar 10mg (1-0-1), Tab. Melmet 500 SR (1-0-1), Tab. Glizid MR- 60 (1-0-1). No one in his family had similar complaints and he had no history of exposure to chemical toxins, poison, head injury etc. He took all the prescribed modern medication but no significant relief was seen. Gradually there was an increase in symptoms which compelled him to visit our hospital.

Clinical Findings

A moderately built, well-dressed hygienic, cooperative male patient having erect posture and masked - anxious facies with 21.77kg/m^2 body mass index. His gait was festinating. His blood pressure was 150/90mmhg and pulse regular with rate 74/min. The respiratory system, gastro-intestinal system, cardiovascular system, remote memory and other higher mental functions were within normal limits. On examination, his olfactory nerve was affected, distant vision was impaired and glabellar tap was positive. No relevant muscle bulk reduction noticed. Muscle power found to be within G4 and G5 grades. Speech was monotonous. Deep tendon reflex over triceps and biceps were diminished for left upper limb, all other reflexes were found to be normal.

On examining the cerebellar functions- dysdiadochokinesis was absent but finger-nose test and heel shin test were impaired on left side. Romberg's test (eye closed) and tandem walking were not possible. Finger tapping was also impaired on left side. His saccades and pursuits were slower than normal limits. On examining the involuntary system, the tremor was slow-repose with rate 22-24/min, rhythmic, multifocal and non-specific direction in nature. On further examination, progressive micrographia, cog-wheel rigidity and hypokinesia were present.

Ashtasthana Pareeksha

Nadi (pulse) - *Sarpagati*
Mutra (urine)- *Atisrishta*
Mala (faeces)- *Badham* (constipated)
Jihwa (tongue) – *Upalipta* (coated)
Sabda (voice) - *Manda* and *Asphashta*
Sparsa (tactile examination) - *Anushna seetha*
Drik (eyesight and eye) -*Hraswadrishti*
Akriti (body) – *Madhyama*

Diagnostic Assessment

Diagnosis of Parkinson's disease is based on clinical presentation. As the patient had fulfilled the cardinal features of rigidity dominant Parkinson's disease along with red flag sign (frequent nightmares) and with no specific causative factors, it can be diagnosed as rigidity dominant idiopathic Parkinson's disease. The cardinal features like cogwheel rigidity, pill rolling tremor (mild), bradykinesia, postural instability was present in this case. For the evaluation of the effect of treatment, grading of subjective parameters has been adopted as mentioned in Table 1.

Table 1: Grading of Assessment Criteria

Grade	**Tremor**
0	No tremor
1	Unilateral slight tremor present at rest decreased by action
2	Bilateral tremor
3	Tremor is not violent but involves few body organs
4	Bilateral violent tremor not suppressed or diminished by the desired movement
Grade	**Rigidity**
0	No rigidity
1	Rigidity is present but vanishes on continuous examination
2	Moderate rigidity was demonstrable and remained throughout the examination
3	Marked rigidity and full range of motion achieved easily
4	Severe rigidity and full ROM achieved with difficulty
Grade	**Akinesia/Bradykinesia**
0	Can walk without aid
1	Can walk without assistance slowly but with a shuffling gait
2	Can walk with assistance slowly

3	Can walk slowly but need substantial help shuffling with retropulsion/ propulsion lack of associated movements
4	Unable to walk without assistance
Grade	**Postural Instability (p)**
0	Normal
1	Slightly stooped, not quite erect
2	Moderately stooped
3	Severely stooped with kyphosis can be moderately leaning to one side
4	Marked flexion with extreme abnormality, unable to arise from the chair without help

*The scale is not validated and is being used in the institute to evaluate the efficacy of the formulation in Parkinson's disease.

***Treatment protocol adopted for this patient is given below**

Stage 1– *Pachana* and *Anulomana* (internal), *Rukshana kriya* (external)

Stage 2– *Samana kashaya*, *Sodhanapurva achasnehapana* (internal)

Stage 3- *Sodhana- Vamana*

Stage 4- *Mrudu brumhana oushadha (*internal), *Pinda sweda* and *Prathimarsa nasya* (external)

Stage 5 – *Sodhana- Virechana*

Stage 6- *Brumhana oushadha* (internal), *Pizinju thadaval* (external)

Stage 7- *Sodhana- Virechana*

Stage 8- *Niruhavasti*

Stage 9- *Brumhana oushadha* (internal), *Murdhnitaila*, *Marsa nasya* (external)

Stage 10- *Rasayana*

Table 2: Internal Medications

Stage	Selection of drug	Dose of drug	Duration
1	*Gandarvahastadi kashaya* *Shaddharana churna* *Vaiswanara churna*	90ml bd, 6 am & 7 pm with *Saindava* (3g) and *Gudam* (12g) 3g with *Kashaya* 12gm with *Takra* before meals	Initial 3 days
	Ashtavargam kashaya	90ml bd, 8 am & 5 pm	Next 4 days
	Vata gajankusha rasa *Parasika yavani choorna*	100-200mg bd with *Guggulutiktaka ghrita* (sufficient quantity for properly mix the powder of medicine) 3g with *Dadima swarasa*/warm water	Next 4 days
2	*Astavargam kashaya* *Nayopayam Kashaya*	90 ml bd 90 ml bd *+ Dhanwantaram gulika* 1-0-1 as *Anupana*	7 days
	Sodhanapurva achasnehapana with Sahacharadi taila	Fixed *Hrasiyasi matra* according to *Jaranasakti* of the patient and gave *Taila* till S*amyak snigda lakshana* seen	7 days
4	*Sahacharadi kashaya* *Maharasnadi kashaya*	90 ml bd given as *Panam*	5 days
6	*Badradarvadi kashaya* *Maharasnadi kashaya*	*90* ml bd 6 am, 6 pm 90 ml bd 11 am, 8 pm	7 days
9	*Vidaryadi kashaya* *Maharasnadi kashaya* *Aswagandharishta*	*90 ml bd + Sahacharadi taila* 21(A) 12ml with *Kashaya* Given *as Panam* 25ml bd	7 days
10	*Chitraka rasayana*	3g with *Sahacharadi taila* (12 ml) as *Anupana*	1 month

Table 3: Procedural Interventions

Stage	Type of Opted Therapy	Drug of Choice	Duration
1	*Udvartana*	*Kolakulathadi churna*	First 5 days
	Dhanyamladhara	*Dhanyamla*	Next 7 days
	Churnapinda sweda (Ruksha)	*Kolakulathadi churna + Triphala churna (*since patient is diabetic)	Next 7 days
	Utgharshana	*Kolakulathadi churna + Kulatha churna* (3:1) ratio with medium depending upon the *Prakriti* and skin type, so used – *Dhanyamla*	Next 7 days
2	*Abhyanga + Ooshma sweda*	*Chinchadi taila*	3 days
3	*Vamana*	*Madanaphaladi yoga*	1 day
4	*Jambeera pinda sweda*	*Parinithakeri ksheera taila* for *Abhyanga*	7 days
	Pratimarsa nasya	*Anutaila* – 2 *Bindu* each nostril	7 days
5	*Virechana*	*Sukumaraeranda taila* dose-30-40ml *Anupana*-milk time- 8 am	1 day
6	*Pizhinju thadaval*	*Masha saindava taila*	7 days
7	*Virechana*	*Sukumaraerandataila* dose-30-40ml *Anupana*-milk time- 8 am	1 day
8	*Nirooha vasthi*	*Musthadi rajayapana vasthi* *Sneha dravya- Ksheerabala taila* (*Chikkana paka*- 50 ml) *Saindava* - 15g *Madhu* – 100ml *Ghrita*- 50ml *Kalka*- 30g *Ksheerakashaya*- 240ml *Mamsarasa* - 100ml	8 days (as *Yogavasthi* pattern)
9	*Sirodhara*	*Mahanarayana taila*	7 days
	Dhmana nasya	*Nasika churna* (3 *Muchudi*)	3 days
	Brihmana nasya	*Maharaja prasaranyadi taila* (1ml in each nostril)	4 days

RESULT AND OUTCOME

Patient showed marked improvement after each stage of treatment. The first positive response (rigidity of upper limb reduced to 50%) was obtained after *Vamana*. The pain and heaviness of upper limb reduced after initial stages of *Rukshana* therapy (especially after *Udghrshana* therapy). After *Jambeera pindasweda,* tremor also reduced. The *Koshta* and *Agni* level got improved after each stage of *Virechana.* Bradykinesia got reduced and the quality of life improved after *Brumhana* therapies done to patient. Postural instability improved after *Rasayana* therapy.

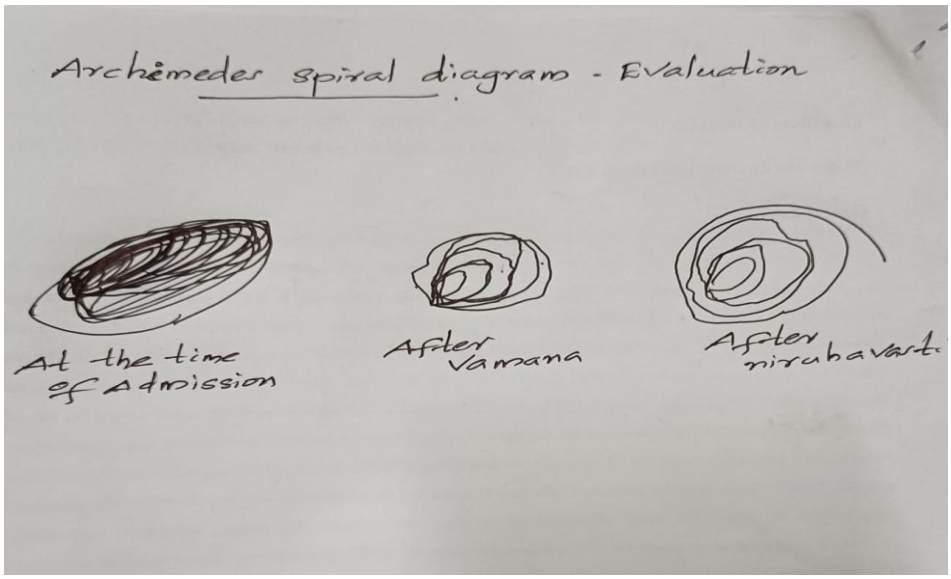

Diagram 1: Showing Archimedes spiral diagram evaluation after *Vamana* and *Niruha vasti* done to patient

Table 4: Effect of Treatment on Tremor, Rigidity, Bradykinesia & Postural instability

Location	BT	AT	Relief
Tremor on RUL	2	1	50%
Tremor on LUL	3	1	66%
Tremor on RLL	3	0	100%
Tremor on LLL	3	1	66%
Rigidity on RUL	3	0	100%
Rigidity on LUL	4	1	75%
Rigidity on RLL	3	0	100%
Rigidity on LLL	4	1	75%
Bradykinesia	2	1	50%
Postural instability	2	1	50%

(BT- Before treatment, AT-After treatment)

*RUL- right upper limb, LUL- left upper limb, RLL- right lower limb, LLL- left lower limb

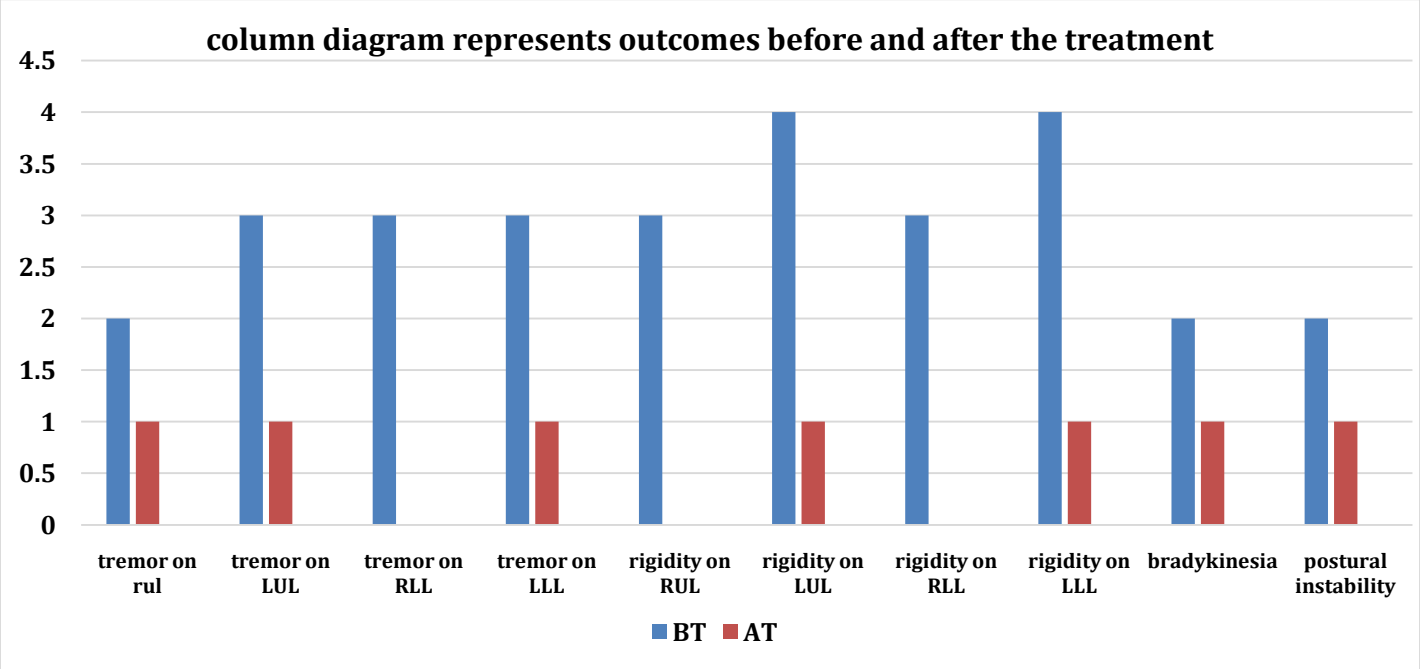

Figure 1: Column diagram represents outcomes before and after treatment

*BT- before treatment, AT- after treatment

*RUL- right upper limb, LUL- left upper limb, RLL- right lower limb, LLL- left lower limb

Follow Up

Marked reductions in the symptoms were seen after the treatment. 2 weeks after discharge patient came to OPD for follow up and there was significant improvement in rigidity, tremor, heaviness and difficulty in raising upper limb etc. Sleep pattern also got corrected. Medicines advised were *Vidaryadi ksheerapaka*, *Brahmi drakshadi kashaya* (45ml od) and *Vata gajankusa rasa* (1-0-1).

DISCUSSION

Wide range of Ayurvedic principles can be judiciously administered to different stages of Parkinson's disease according to *Yukti*. Considering the pathologic presentations, *Sthambha*, *Kampa*, *Gatisanga*, *Chestasanga* are the important features of all kind of Parkinson's disease. Unilateral/bilateral tremor, involuntary movements of other body parts, postural instability, bradykinesia, monotonous speech, weight loss, depressed facies, constipated bowels with black stools, abdominal discomfort, flatulence, shoulder pain and heaviness, sleeplessness, dryness of skin, giddiness, mild memory impairment, difficulty to write using pen, olfactory dysfunctions, reduced appetite, indigestion and nightmares etc presented by the patient can be considered as *Vata samsrushta lakshanas*. Rigidity dominant Parkinson's disease can be considered as a *Kapha* predominant condition. Hence *Ushna-ruksha* and *Langhana* line of management will give *Upasaya* for *Sthambha pradhana*

Parkinson's disease. *Sheeta guna* is always *Anupasaya* since it is aggravating *Vata kapha doshas*. Initially we should consider *Agnibala* and state of *Apana vata*. So, the first step in treatment is *Vatanulomana*, *Amapachana* and *Agni deepana*. For that we gave *Gandarvahastadi kashaya* with *Yadarha prakshepa dravyas*. *Gandarvahastadi kashaya* is a formulation having *Tikta katu kashaya rasa pradhana* and slightly *Ushna veerya swabhava*[5]. It is having *Apana vata anulomana*, *Srishtavinmutratva*, *Deepana* and *Ruchya* properties. It is best to impart *Apana vatanulomana* and *Agni deepana* in initial stages. It is given in *Apana vayu oushadha kala* by conventional practice.

Bradykinesia even affects the peristaltic movement of intestine and patients present with chronic constipation as *Poorvarupa* and *Rupa*. Administration of *Gandarvahastadi kashaya* at *Apanavata oushadhakala* with appropriate *Churna* or *Prakshepa dravyas* will address the complaint more effectively. *Shaddharanam churna* explained in *Vatavyadhi prakarana* is having *Katu tikta rasa pradhana*, *Ushna veerya* and *Kaphaharatva* property[6]. So, it is best to impart *Amapachanam* in initial phases. *Shaddharana churna* is told as *Mahavatavyadhi prasamana yoga* in *Cakradatta*. So, it can be safely administered to rigidity predominant Parkinson's disease.

After attaining proper *Deepana*, *Pachana* and *Vatanulomanatva* we gave *Samana kashayas* like *Ashtavargam kashaya*. *Ashtavargam kashaya* is commonly using for neurological conditions having *Vatakapha* origin. Major part of the drugs is *Ushnaveerya* and *Vata kapha samana* which in turn acts as *Pachana* as well as *Avaranahara*[7]. *Lasuna* is one among the content and which exclusively act as *Avaranaghna* (except for *Pitta* and *Rakta avarana*). More over rigidity and bradykinesia can be consider as a *Kaphavrita vata* state. So, this yoga can be used as a broad spectrum *Vatavyadhi* drug having neurological origin. *Parasika yavani churna* is *Katu tikta rasa pradhana*, *Guru ruksha guna*, *Ushna veerya* and *Madaka* (narcotic) in general. It is having *Vedanasthapaka*, *Soolaprasamana* and *Nidrajanaka* properties[8]. *Vatagajankusa rasa* is prepared as *Antardhuma* method explained in *Bhaishajya Ratnavali*. Contents like *Gandhaka*, *Kantha bhasma*, *Abraka bhasma* are having *Rasayana* property.

Along with first stage of *Deepana pachana kashayas* internally, external *Kriyas* like *Udvartana*, *Utgharshana*, *Dhanyamla dhara* and *Churna pinda sweda* are done. *Udvartana* with *Kolakalathadi churna* is administered, to clear the association of vitiated *Kapha*. *Kolakulatha churna* is a compound drug with specific indication on *Vatavyadhi*[9]. Since the patient is presented with heaviness along with cog wheel rigidity, we did *Udgharshana* with *Kolakulathadi* or *Kulatha churna* mixed with *Dhanyamla*. *Dhanyamladhara* is a procedure explained in the renowned treatise of traditional Kerala Ayurveda, *Chikitsa Manjari* which recommends *Dhanyamla dhara* as a first line therapy in *Pakshaghatha*[10]. It is exclusively done for the *Vatavyadhis* associated with *Ama* as well as *Pitta* and *Kapha*. *Churna pinda sweda* is a type of *Tapa sweda* which is administered to clear the *Avarana* of *Kapha. Kolakulathadi churna* is the drug of choice opted for *Churna pinda sweda*.

The duration of *Bahya rukshana* can be modified to below 7 days if the patient attains the following changes namely improvement in appetite, proper evacuation of bowel, reduction in symptoms like heaviness, swelling, flaccidity, burning sensation, numbness and body pain. *Abyanga* with *Taila* having more *Kapha vata samana* property can be used from the second stage onwards. Hence, we selected *Chinchadi taila*, which is processed with *Amla lavana pradhana dravyas* and *Ushna*, *Teekshna* and *Kapha vatahara* in nature. *Ooshma sweda* also helps to bring back *Leena utklishta doshas* from *Uthamanga marma* to *Koshta* for elimination.

Sodhanapurva achasnehapanam is advised for imparting *Dosa utklesa* which is necessary prior to *Sodhana* procedures. For that purpose, we selected *Taila* preparations since the patient is having *Vatakapha prakriti*. The first phase of *Sodhana* should be *Vamana* because *Vamana* is found to be more effective in rigidity dominant Parkinson's disease. It is best to impart *Uthamanga dosha nirharanatva*, *Kapha avaranagna* and it is clinically experienced by expertise the improvement of rigidity (by drawing Archimedes spiral diagram before and after the procedure of *Vamana*) after first sitting of *Vamana* itself. After *Vamana*, *Sodhana* procedures like *Virechana*, *Sodhana nasya* and *Sodhana vasti* can be done. *Nithyaanulomana* is also recommended for this kind of patients because abnormal protein accumulation and aggregation is one of the strong causative factors for the pathology of this neurodegenerative disorder. So, the disease itself demands *Nityaanulomana* and *Erandataila* is the best drug of choice for imparting *Mridu sodhana* for long-term purpose. *Eranda taila* is a *Snigda virechana oushada* with *Ushna teeksha sukshma* and *Sara gunatva*. So, it is best to explicit its function as *Srotosodhana* and *Amaharatva*.

After the initial *Sodhana*, *Taila* and *Ghrita* can be used along with above said *Kashayas* as *Anupana dravyas.* As *Taila* and *Ghrita* are lipid medium, it can cross blood brain barrier more easily and can results in reducing the rate of progression of the disease. After first line of *Sneha sweda* therapy, in the second stage *Pinda sweda* is opted. *Pinda sweda* is a type of *Ooshmasweda* and is *Kapha vata samana* in nature.

Jambeera pinda sweda offers a better *Kapha samanatva* and *Avaranaharatva* due to its presence of *Ushnaveerya* and *Kaphahara* drugs. It is useful for curing stiffness or rigidity in limbs. *Jambeera pinda sweda* is *Kaphavata samana* and found to be more efficient in reducing the rigidity and bradykinesia. *Samana kashayas* are then replaced with *Brimhana kashayas* rather than giving *Ruksha kashayas* we can add *Taila* or *Ghrita* as *Prakshepa* along with *Kashayas* if the patient's condition is satisfactory.

In the next stage we continued *Brihmana kashayas* internally and *Snigda* procedures externally. For that purpose, we administered *Pizhinj thadaval*. Considering the involvement of *Upadhatus* like *Sira snayu kandara*, *Masha saindavadi taila* is a drug of choice for *Pizhinj thadaval*. Since the patient presenting more aching pain as clinical symptom *Mahanarayana taila*[11] is selected for *Sirodhara*.

Being a *Vatavyadhi*, *Vasti* has got the prime role. The main aim of *Niruha vasti* is to impart *Dosha samanatva*. So that, *Mustadi rajayapana vasti* is selected. *Musthadi rajayapana vasthi*[12] has an immense role in all three types of Parkinson's disease since it is a *Yapana vasthi*. Its *Vrishya* nature has the *Prabhava* to cure *Dhatukshaya* especially in *Majja dhatukshaya (Masthulunga majja)*. All *Vrishya oushadhas* has direct action in limbic system. Extra pyramidal structures have close relation with limbic system as they can increase the dopamine surge. Therefore, *Vrishyavasthis*[13] are also commonly practicing in the management of Parkinson's disease. *Nasya* always has excellent results in neurological disorders since it is the easiest way to impart active principles to site of pathology than other *Panchakarma* modalities. *Pratimarsa nasya* is done throughout the treatment course after initial *Kayasodhana* since it is the procedure explained in our classics as "*Aajanma maranam sastam*".[14] At the later stage of the treatment, the patient's condition became *Vatika avasta* or free of *Avarana* state, so we did *Marsa nasya* with *Taila* after 3 days of *Teekshna nasya* (*Dhmana nasya*).

Rasayana chikitsa is very important in the treatment and prevention of Parkinson's disease. Since it is a rigidity dominant case, we selected *Chitraka rasayana* with *Sahacharadi taila* as *Anupana*. The total duration and number of days opted for both *Antaparimarjana* and *Bahiparimarjana chikitsa* is based on the *Upasaya* and *Anupasaya* of the *Chikitsa*.

CONCLUSION

Movement disorders are extremely common in clinical practice and account for a considerable proportion of neuro morbidity. Parkinson's disease is the second most common neurodegenerative disease after Alzheimer's disease. Direct reference of parkinsonian movement disorders in ancient Ayurvedic literature is sparse and refers only to related symptoms such as *Kampa, Sthambha, Cheshtasanga, Gatisanga.* There so many varieties of *Chikitsa* explained in our classics and they can be logically applied for accurate condition in *Rogi* based on *Vaidya's yukti.* In clinical practices also we can see so many variations according to practitioners. Here the patient got considerable relief from his symptoms and his quality of life also got improved. Marked improvement in rigidity and heaviness of upper limb achieved. He was very much satisfied and trusted after the treatment. So, this successfully managed case and the treatment protocol will be a stepping stone to practitioners.

Declaration of Patient Consent

Authors certify that they have obtained patient consent form, where the patient has given his consent for reporting the case along with the images and other clinical information in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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