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Case Report

Ayurveda management of Guillain-Barre syndrome: A case report

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ABSTRACT

Guillain-Barre syndrome (GBS) is a severe acute paralytic neuropathy with rapid progression usually occurring post infections. Inspite of the active medications it is associated with severe weakness, incomplete recovery and pain. Long disease course can cause autonomic dysfunction or deterioration in general health and life threatening complications like respiratory failures. Current case was diagnosed as GBS with motor, sensory & sphincter disturbance. Ayurveda diagnosis of *Sarvangavata* was made and customized treatment strategy was planned. First part of *Kapha pitta samrushtavata* (*Vatadosha* associated with *Kapha* and *Pitta dosha*) and then *vatahara chikitsa* were followed. Treatments were *Koshta shodhana* (gut cleansing), *Abhyanga* (massage of whole body with medicated oil), *Ksheera parisheka* (dripping of medicated milk over body), *Shastikashali panda sweda* (Rubbing of medicated rice poultice over body), *Anna lepa* (application of medicated rice over the body), *Shirotalam* (trans cranial drug administration by applying medicines over scalp), Basti (trans rectal administration of medicines) and Oral medicaments. Panchakarma treatments were for 14 days followed by oral medications for next 151 days. Intervention period of 165 days showed complete recovery of all the motor, sensory & sphincter deficits however follow up of the patient was maintained for 437 days looking in to the sustainability of the outcomes.

1. Introduction

Guillain-Barre syndrome (GBS) is one of the most common severe acute paralytic neuropathy. Is a heterogeneous rapidly progressive disease. GBS has a monophasic disease course post infection and is usually non relapsing. Around 20–30% of patients may be associated with life threatening respiratory failures. Prevalence is 2.7 per 1,00,000 per year [1]. Prevalence is more in men than women and has seasonal fluctuations.

GBS is usually preceded by an infection resulting in immune stimulation. This induces molecular mimicry between microbial and nerve antigens leading to an aberrant autoimmune response targeting peripheral nerves and their spinal roots [2]. One to two weeks post immune stimulation, clinical manifestation begins with a rapidly evolving are flexic motor paralysis with or without sensory disturbances. Typically weakness is ascending paralysis which evolves over hours to a few days. Affliction of lower limbs is more common than upper. Cranial nerves can be involved. Other manifestations include tingling dysesthesias, autonomic disturbance, and respiratory failure. Peak presentations are in a period of 2–4 weeks [3]. Main phenotypes of GBS are acute inflammatory demyelinating polyneuropathy and acute motor axonal neuropathy based on pathology involved in myelin sheath or nerve axon respectively.

Intravenous Immonoglobulins (IVIg) [4] and plasma exchange [5] have shown evidences in the management of GBS. In spite of these therapies patients develop severe weakness, incomplete recovery, pain, fatigue and a long disease course [1]. Other hindrance of these therapies specially in developing and under developed countries are the high cost involvement. Mortality rate in GBS is 4–7% in spite of the advances in the treatment strategies [6]. Mortality is due to ventilatory insufficiency, pulmonary complications, autonomic dysfunction and deterioration in general health. Recovery period may last from months to years with decay in immune response and endogenous repair of peripheral nerves. Recovery results in severe and permanent disability with substantial affect on daily activity and quality of life [7]. Poor prognostic factors are high age (above 40 yrs) and high disability at nadir [1]. Studies have recommended for development of more effective treatments

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[8]. Ayurveda mentions a clinical condition termed sarvanga vatavyadhi [9], which symptomatologically relates to GBS. *Sarvangavata* presents itself with motor deficits, speech derangement, severe pricking and aching pains, may affect from single limb to whole body. Treatment of *sarvangavata* depends on pathological state of *vatadosha*. *Vatadusti* could be due to primary increase in *Vata* alone or due to other *dosha* and *dhatus* (body tissues). State of *vata* can be saama (gross metabolic disturbance) or *niraama* (without gross metabolic disturbance). Pathological staging could be due to gata or avarana. Considering these various factors management is planned either through *santarpana* (nourishing) or *apatarpana* (debilitating) principles (Table 1).

2. Patient information

A 60 year old female patient presented with loss of power of both upper and lower limbs, associated with deranged sensation like pricking and tingling sensation all over the body, numbness in both palms & soles, incontinence of urine since last 12 days and Foley's catheter in-situ reported to outpatient department of KLE Shri BMK Ayurveda Hospital Belagavi on 10th September 2016.

3. Clinical findings & diagnostic assessments

Clinical examination at KLE Ayurveda hospital, Belagavi showed that deficit in sensory system like tingling, pricking sensations all over the body and numbness at both palmar and plantar surface of all extremities. Motor system like quadriplegia and muscle power was of grade 1. Patient had incontinence of urine. Further examination showed no abnormality in cranial nerves, higher mental functions were intact. Details of examinations findings at different time points have been summarized. Patient met diagnostic criteria of GBS [10].

Assessments were done at various time points like 1st, 4th, 7th, 10th, 14th, 96th, 113rd, 165th, 283rd, 367th and 437th day of intervention. Sensory system assessment like tingling, pricking and numbness were assessed through visual analogue scale (0–10) [11], Power was graded (0–5) [12], Reflexes (0-++) [13]. Clinical assessments of activities of daily leaving (ADL) were through The Barthel Index (BI) [14], comprehensive disability assessments were through Modified Rankin Scale (MRS) [15], quantitative measure of neurological deficit were through NIH Stroke scale (NIHSS) [16] (Supplementary file. Table 1).

4. Timeline

History revealed episode of fever 20 days back which lasted for 8 days and was treated by a local physician. On 8th day patient noticed gradually progressive bilateral weakness in both upper and lower limbs, back ache and incontinence of urine for which she was shifted to a tertiary care centre at Belagavi. Patient didn't have history of diplopia, regurgitation, dysphagia, loose stools and trauma. Patient was a known case of Essential hypertension and was on tablet Amlodipine 5 mg once a day. Examination findings in tertiary care canter were areflexic quadriparesis, urine incontinence, preserved higher mental status functioning. Vital examination findings like blood pressure, pulse, respiratory rate etc. were within normative limits. Blood investigation parameters like haemogram, renal and liver function test, electrolytes, Creatinine Phosphokinase (CPK) values were within the normative limits.

Table 1
Comparison of Guillain barre syndrome, *Sarvangavata* and manifestation in the patient.

S.No	Textual Information – Sarvanga vata [9]	Textual Information – Guillain barre syndrome (GBS)	Manifestations in the Patient
1.	**Pathogenesis**-		
	Morbid *Vata* increase (वातप्रकोप) associated with decreased tissue elements (धातुक्षय), association of other dosha (*Samsrusta dosha*) like *pitta & kapha*	Nuero degenerative disorder, autoimmune dysfunction	Preceded with fever followed by heaviness (गुरुत्वा) and stiffness (स्तम्भ) of extremities. Suggestive of *Kapha & Pitta* involved *Sarvangavata*
2.	*Pitta* association in *pakshaghata* produce increase in body temperature (**सन्ताप**), *Kapha* association cause heaviness (गुरुत्वा) and stiffness (स्तम्भ) (Maadhava Nidaana. 22.42)		
3.	*Vitiated vayu* affects to the right or left part of the body (हत्वैकं मारुतः पक्षं दक्षिणं वाममेव वा- C.Chi.28.53). It can effect whole body in sarvangavata (Chakrapani- C.Chi.28.55)	GBS can effect motor and sensory functioning of all limbs	Loss of power of both upper and lower limbs. Incontinence of urine.
4.	difficulty for the movements (कुर्याच्चेष्टानिवृत्तिं)	There is usually a progressive ascending motor weakness starting in the lower limbs, spreading to paraplegia and quadriplegia	Loss of muscle strength in all extremities. First affecting both lower limbs then both upper extremities were affected.
5.	Pain (रुजं, तोद, शूल) in the affected areas	Sensory deficits	Sensory deficits of pain, pricking, tingling sensation all over the body. Loss of sensations in soles & palm.
6.	speech deficits (वाक्स्तम्भमेव)	Cranial nerve involvement resulting in facial, oculomotor, or bulbar Weakness.	Not affected
7.	*Sira* and *snayu* gets effected (सिराः स्नायूर्वशिष्य) in *Sarvanga vata*. *Snayugatavata* has features contracture deformity (बाह्याभ्यन्तरमायामं). (Cha.chi.28/35) *Siradusti* can cause pain (रुजं) and loss of sensation (सुप्तता). (cha.chi.28/36)	Paralysis or paresis may later develop to contractures and flexion deformities.	Patient had pain and aesthesia.
8.	*Sarvangavata* with *pranavata dusti* presents with *karmendriya dusti* like urinary incontinence	Autonomic dysfunction is common and may cause arrhythmias	Urinary incontinence
9.	It affects to one part of the body or whole body it is known as *sarvangaroga* (एकाङ्गरोगं तं वदियात् सर्वाङ्गं सर्ववदेहजम्)	GBS presentations can begin with effecting single limb and spread to other limbs and to the whole body	Affecting all four limbs, pain in all over the body, Urinary incontinence. Hence effecting whole body
10.	Contractures in lower limbs (पादं सङ्कोच)	Muscle wasting & contractures	–
11.	*Apanavayu* abnormality	Autonomic dysfunction	Urinary incontinence
12.	*Prognosis* – *pakshaghata* caused due to involvement of multiple dosha is curable (साध्यमन्येन संयुक्तम) (S.S.Ni. 1/63)	70–80% have complete recovery. 20–30% may have persisting disability	Completely cured

Patient was diagnosed with AIDP (Acute Inflammatory Demyelinating polyrediculopathy) and was treated with Intravenous Immunogolbulins (IVIG) and pulse steroid therapy for 9 days. However patient noticed slight worsening of limb power. Patient got discharged from hospital due to lack of affordability to treatment. Three days later patient approached KLE Ayurveda Hospital Belagavi (IPD.No. 3522-10/09/16).

Case is unique because of motor, sensory and sphincter disturbance presentation and its management through Ayurveda. Case reporting is done as per the CARE Case report guidelines (http://www.care-statement.org).

5. Therapeutic intervention

Patient was diagnosed with *sarvangavata*, pathological staging was *Kapha pitta dosha* abnormality along with *vata*.

Management was with *koshta shodhana*, *sarvangaabhyanga*, *shastika shali panda sweda*, anna lepa, *shirotala dharana*, *niruha basti*, *anuvasana basti*, *shaman aushadhi* (oral medicaments). Details of the treatment like chronological interventions, duration of treatment, medicine used, dosage etc. have been enlisted (Supplementary file -Table 2 and 3).

All ayurveda panchakarma procedures were done as per the principles and practises of Ayurveda [17].

Shiro taladharana is a procedure in which Bala roots, amalaki fruits, Musta rhizome, Guduchi stem powders of 7.5 gms each were mixed with sufficient quantity of *Karpastyadi Taila* till attained the paste consistency. Then this paste was placed on scalp of the patient over which two gauze pieces of 6.5 × 6.5 cms size were placed. These paste and gauze piece were secured by tying with a cloth from scalp to chin. This was carried out from 5pm to 7pm and was retained for 120 min and later was removed and scalp was cleaned.

6. Follow-up and outcomes

Patient was treated from September 2016 to November 2017. Active intervention for GBS was till February 2017 (165 days) during which period patient had neurological deficits. And patient follow up observation was continued till November 2017 (437 days) as patient had other symptoms like *amlapitta* (Acid peptic disorder) and *sandhivata of dakshina janu sandhi* (Osteoarthritis of right knee joint) (Supplementary file. Table 1).

Outcome on Sensory system findings like tingling and pricking sensation showed a reduction from score 8 to 5 by 10^{th} day and to complete recovery by 165^{th} day. Numbness reduced from score of 10 to 3 by 10^{th} day and complete recovery by 113^{th} day. Muscle strength of all extremities showed a steady increase from grade 1 (base line), 3 (10^{th} day), 4 (96^{th} day) and complete recovery by 165^{th} day. Tendon reflexes improved from areflexic state to near normal on 14^{th} day and to normalcy by 96th day. Restoration of urinary sphincter control was observed by 7^{th} day of intervention. Clinical assessment measures showed gradual improvement from base line scores [10 (BI), 5(MRS), 13(NIHSS)] to 14^{th} day scores [50 (BI), 4(MRS), 6(NIHSS)] and a complete recovery [BI (165^{th} day), MRS (283^{rd} day), NIHSS(283^{rd} day)]. All Neurological deficits were restored by 165 days of intervention (Supplementary file.Table 1).

7. Discussion

Ayurveda treatment showed to be effective in management of GBS. Extended follow up observations showed that improvements were well sustained. Patient continued the follow up even after total remission of the GBS symptoms for other health complaints like right knee joint pain and acid peptic disorder. Accordingly medications were advised.

GBS in current patient was severe debilitating with total loss of power in all extremities, sensory deficits in all four limbs and incontinence of urine but was with no life threatening conditions like respiratory disturbance or autonomic dysfunctions like arrhythmias. Patient could not afford standard therapy of IVIG due to cost factor.

Ayurveda treatments were on the line of *vatavyadhi*. *Koshta shodhana* (gut cleansing), Sarvanga abhyanga (massage of whole body with medicated oil), *ksheera parisheka* (dripping of medicated milk over body), *Shastika shali panda sweda* (Rubbing of medicated rice poultice over body), *Sarvanga Annalepa* (application of medicated rice over the body), *Shirotala dharana* (trans cranial drug administration by applying medicines over scalp), *Basti* (trans rectal administration of medicines) and oral medications.

Initially diagnosis of *sarvanagavata* was with *kapha pitta samrista avastha* was made hence *koshta shodhana*, *ksheera parisheka*, *shirotalam*, *basti* with *Kaphapittahara* medicines were initiated. During the course of panchakarma management there were slight modifications. *Sweda* (sudation therapy) was shifted from *ksheera parishek* to *pinda sweda* after physicians felt that patient can tolerate *pinda sweda* as it is *mahan sweda* (strong fomentation). *Niruhabasti* with *musta*, *dashamoola* and *guduchi kashaya basti* and *mahatiktaka anuvasana basti* was started and *anuvasana basti* were altered to *mahavishagarbha taila*. Alteration was to address pain (शूल), decreased sensations (सुप्तता) along with other manifestations of morbid vata. Once the *kaphaja lakshana* like heaviness (*gurauta*) decreased and lightness of body was observed on 10^{th} day, basti treatment was modified to *musta*, *dashamoola* and *guduchi ksheera basti* and *ksheerabala anuvasana basti* (Table 2) (Supplementary file. Table 2).

After gut cleansing (koshta shodhana), oral medications were started on day 2 of treatment. Medications administered to counteract *Kapha Pitta samrustha vatadosha* were *Dhanadhanayanadi kashaya* (DDK) [18], *Dashamoola kashaya* [19], *Tab Bruhat vata chintamani rasa* (without gold) (BVC) [20], Capsule *Ksheerabala* (KB) [21] and *Ksheerapaka of guduchi*, *yastimadhu*, *bala*. On day seven of treatment, we noted increase in pain and stiffness in whole body hence to address *vatakapha* pathology oral medications were modified. *Dashamoola kashaya* was withdrawn and replaced with *Dashamoola arista* [22], *Sahacharadi kashaya* [23] and Capsule Nueron [24]. Capsule Nueron were included because of *Kaphavatahara* ingredients like *lashuna, eranda, dashamoola, trayodashanga guggulu* etc. Daily *abhyanga* of whole body with Maha masha tail [25] followed by hot water bath was advised. On Day 96 patient reported gross decrease in numbness but not in tingling & pricking sensation, hence we added *Balarista* [26], capsule Palsinueron (ingrediants like *mahavata vidwamsa rasa, sameerapannaga rasa* etc are potent *vatahara, shulahara* and *rasayana*) [27]. On Day 113 again Cap Nueron were added as patient noticed slight heaviness of limbs. From 165th day on wards we noticed that all the symptoms associated with GBS had subsided and patient had *amlapitta* manifestations and *sandhivata of dakshina janu sandhi* hence medicines like *kamadudha rasa* [28] and *dashmoolarista* were prescribed (Table 2) (Supplementary file. Table 3).

Various medicinal preparations were used during the course of treatment. Compound formulations like BVC tablet, Neuron capsule, Palsineuron capsule, KB capsule were used. Liquid medicaments like *Sahacharadi kashaya*, DDK, *dashmoolaarista*, *dashamoola kashaya*, *bala arista*. Previous studies on some of these medicines have shown beneficial effect. BVC has shown nueroprotective activity [29], *bala arista* has shown anti-inflammatory activity [30], *Shastika shalli pinda sweda* has shown improvement on motor deficits of cerebral palsy patients [31], *Anuvasana basti* with *ksheera balataila* showed to produce improvement in osteoarthritis [32]. Aswagandha (Withaniasomnifera) has nueroprotective effect [33], *Dashamoola* has anti-inflammatory effect

Table 2
Possible samprapti vighatana analysis.

Sr.No	Duration of Intervention	Lakshana (Manifestation)	SAMPRAPTI (Pathology)	Dosha Vruddhi /Kshya Avastha	Chikitsa (Treatment)
1.	1–10th Day	Fever as pre morbid manifestation	*Pitta*	*Kapha Pitta samrsuta vatavruddhi*	*Kostashodhana,*
2.		Loss of sensation (सुप्तता), Heaviness (गुरुत्वा)	*Kapha*		*Ksheerapaka* (guduchi,yastimadhu,bala)
3.		Pains (शूल, तोद), loss of functioning (कर्म क्षय), Disturbed sleep (निद्रानाश), Urine incontinence (कर्मेन्द्रयविहानि)	*Vata*		*Kashaya* (Musta, gudchi, dashamoola) basti, *Anuvasana basti* with *Mahatiktaka ghruta* & *Mahavishagarbha taila,* *Sarvanga abhyanga* with *Mahavishagarbha taila, Shastikashali panda sweda*
4.	10th –14th Day	loss of functioning (कर्म क्षय), loss of motor activity (चेष्टाहानि), tingling and pricking sensation all over the body (तोद), decreased sensation (सुप्तता)	*Vata – Vyanavata Apanavata*	*Vatavruddhi*	*Sarvanga abhyanga* with *ksheerabala taila, shastikshalli panda sweda, annalepa, ksheerapaka parishek, shirotalam, mustadi ksheera basti, anuvasana basti* with *ksheerabala taila*
5.	14th –165th day	Pain (शूल), loss of functioning (कर्म क्षय), decreased sensation (सुप्तता)		*Vata pradhana kapha*	*VataKapahahara Rasayana-Sahacharadi (vatakaphahara), Dashamularista (Tridoshhara) Bruhatavata chintamani, Capsule Nueron, Capsule Kshirabala etc.*

[34]. Medicines and panchakarma therapy used for the treatment have *vatakaphahar* and *rasayana* effect. Pharmacological action of drugs could be through actions on *pranavayu, vyanavayu* and all *dhatus* (tissue) specially *mamsa, sira, snayu* and *majja*.

Ayurveda management through whole system approach [35] in which treatment initiated for morbid increase in *Vata* along with *Kapha pitta dosha* stage and was modulated to *vata* predominant stage and continued with *rasayana* management (regenerative). Ayurveda management showed complete recovery in GBS patient with sensory, motor deficits and Urinary sphincteric disturbance. Long term follow up showed sustenance of all the positive outcomes.

8. Conclusion

Ayurveda management of GBS showed amelioration of motor, sensory and sphincter deficits. Treatment with 14 days of various panchakarma procedures and oral administration of Ayurveda medicines for next 151 days showed compete recovery on all deficits. These treatments were safe and effective. Following Ayurveda model of treatment like stage wise and customized approach have beneficial effect. Outcome showed significant role of Ayurveda in severe debilitating disorder like GBS. Ayurveda management can decrease the disability and improve quality of life.

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Conflict of interest

None.

Informed consent

Patient gave informed consent for publication.

Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jaim.2018.08.004.

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