Case Study

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A SUCCESSIVE CLINICAL STORY ON GUILLAIN-BARRE SYNDROME UNDER THE LIGHT OF AYURVEDA: A CASE STUDY

Manasa S [1]*, CV Rajashekhar [2], Abdul Khader [3]

[1] PG Scholar, Department of Kayachikitsa, Sri Kalabyraveshwaraswamy Ayurvedic Medical College, Hospital and Research Centre, Bengaluru, Karnataka, India

[2] Professor and HOD Department of Kayachikitsa, Sri Kalabyraveshwaraswamy Ayurvedic Medical College, Hospital and Research Centre, Bengaluru, Karnataka, India

[3] Professor, Department of Kayachikitsa, Sri Kalabyraveshwaraswamy Ayurvedic Medical College, Hospital and Research Centre, Bengaluru, Karnataka, India

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***Corresponding author**
E-mail: manasasureshgowda1995@gmail.com

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ABSTRACT

Guillain-Barre syndrome (GBS) is a group of autoimmune syndromes comprising the disease's demyelinating and acute axonal degenerating forms. It is also an acute-onset, monophasic, immune-mediated polyneuropathy that often follows an antecedent infection. Here is an interesting case study where a 16-year-old girl with her parents reported to the outpatient department with the chief complaint of inability to walk without support, weakness in bilateral calf muscles, weakness in bilateral upper limbs and lower limbs and tingling sensation, pulling type of pain in the right ankle joint and also the heaviness of bilateral lower limbs, more in the morning. By examination, her sensory and motor systems showed impairment; one was hypotonic, proprioception was affected, and her gait was a high steppage gait. Her assessment was done by using Hughes GBS Disability Scale- 3/6. The patient's nerve conduction study revealed severe motor and sensory axonal neuropathy in the upper and lower limbs. By seeing the nature of the disease and the patient's symptoms, we correlated with sarvanga vata according to our classics. Treatments were koshta shodhana (gut cleansing), abhyanga (massage of the whole body with medicated oil), Shastikashali panda sweda (Rubbing of medicated rice poultice over the body), basti (transrectal administration of medicines) and oral medicaments. Panchakarma treatments were for 30 days, followed by oral medications for the next 140 days. The intervention period of 154 days showed complete recovery of all the motor and sensory deficits; however, follow-up of the patient was maintained for 269 days, looking into the sustainability of the outcomes.

Keywords: Guillain-Barre Syndrome, Sarvanga VataVyadhi, Panchakarma, Shamunashadi

INTRODUCTION

Guillain-Barre syndrome (GBS) is an eponym for a heterogeneous group of immune-mediated peripheral neuropathies. A feature common in all GBS variants is a rapidly evolving poly radiculoneuropathy preceded by a triggering event, most often an infection[1].

Population-based surveys attempting to document the annual incidence of GBS have been conducted in various countries worldwide and generally agree on a rate of 1 to 3 per 100,000 persons annually.[2] The first peak likely correlates with an increased risk of cytomegalovirus and *Campylobacter jejuni* infection.

GBS manifests as symmetric motor paralysis with or without sensory and autonomic disturbances. The patient with GBS typically presents with weakness accompanied by tingling dysesthesias in the extremities. This weakness is prominent in the proximal muscles; legs are more often affected than arms. Paresthesias occur, spreading proximally but seldom extending past the wrists and ankles. Deep tendon reflexes disappear within the first few days of symptom onset. The progressive phase of the syndrome lasts from a few days to four weeks. About 73 percent of patients reach a nadir of clinical function at one week and 98 percent at four weeks.[3] The progressive phase is followed by a plateau phase of persistent, unchanging symptoms. Improvement will begin within days of the plateau. The time to resolution of symptoms varies among patients. Pain, another common feature of GBS, is seen in approximately one-half of all patients and is sometimes described as severe, occurring with even the slightest of movements. Pain is most potent in the shoulder girdle, back, and posterior thighs.[4, 5] Patients complain of deep aching pain in the weakened muscles, similar to the muscular discomfort experienced following exercise. Pain may accompany muscle cramps, which are most severe at night.

Ayurveda mentions a clinical condition termed sarvanga vatavyadhi[6], which symptomatologically relates to GBS. Sarvangavata presents with motor deficits, speech derangement, and severe pricking and aching pains, which may affect a single limb to the whole body. Treatment of sarvangavata depends on the pathological state of vata dosha. Vata dusti could be due to a primary increase in Vata alone or other dosha and dhatus (body tissues). The 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

CASE REPORT

A 16-year-old girl with her parents reported to the outpatient department of Kayachikitsa at SKAMCH and RC, Bangalore, India, with the chief complaint of inability to walk without support for five months, pain and weakness in bilateral calf muscles for 4 ½ months, weakness in bilateral upper limbs and lower limbs and tingling sensation since 4 ½ months, pulling type of pain in the right ankle joint since four months, body ache since four months, heaviness of bilateral lower limbs, more in the morning hours since three months.

The patient was healthy before July 24th, 2021, as per her parents and patient's statement; the patient had menarche on June 6th, 2021; on the day of the menarche, the patient noticed slight pain along with the weakness of her calf muscle which persisted about 2 to 3 weeks, which she neglected.

After about one month, when the patient had a menstrual cycle for the second time on 9th July 2021, she noticed aggravation of pain in the bilateral calf muscles, which was a continuous and catching type. After five days, pain intensity was reduced, although, on July 25th, pain again aggravated after a photo shoot during which she stood for 2 hours continuously, which persisted for two days. She also noticed a cramp in her bilateral lower limbs, for which she used cold packs and tablet paracetamol. As the patient took this tablet, the pain was relieved for 2 hours, but the pain persisted after 2 hours.

On the 3rd of August, at midnight around 2 am, she had severe cramps in bilateral calf muscles but more in the left calf muscle and was unable to move the lower limbs. On the 4th of August, when she and her parents visited an Orthopaedic surgeon, she was advised to continue tab. paracetamol and cold pack for five days. Despite the pain, the patient travelled from Mysore to Bangalore for a family function and returned on the 8th of August. On the 9th of August, she noticed pain in her bilateral soles; soles were hard, and she was unable to fold her toes of bilateral lower limbs; she had severe pain and tingling sensation in her lower limbs which was aggravating in Night time, on prolonged standing, on walking, her intensity of pain was more and disturbed sleep was seen most of the nights. She also noticed difficulty having food due to her inability to hold the spoon; she had trouble grasping the coffee mug, reduced her appetite, and started consuming less food. There were impairs in her daily activities, such as difficulty wearing her footwear and socks; later on the same day, she also noticed that her online class was hampered due to her inability to hold the pen to write. She could not comb her hair and could not twist the rubber band to tie a pony. On the 20th of August, while the patient was taking a bath, she had a loss of balance and loss strength in her bilateral lower limbs; along with that, she had reduced sensation and sudden cramps and weakness in her bilateral lower limbs, for this she consulted Orthopaedic surgeon, the consultant advised their investigation. On 23/8/21, she reported vitamin D3 deficiency, and the consultant recommended a vitamin D3 injection; as per his advice patient underwent the treatment. Later, the pain reduced for about a day.

On the 26th of August 2021, she was unable to lift both feet and toes and used to make slapping sounds while walking and required support to walk. She could walk with difficulty by bending at hips and never had bucking of knees. For this, she was taken to a neurologist at Narayana Multispeciality Hospital, Mysore, India, where several investigations were done. On evaluation CBC, RFT was normal; nerve conduction study of both upper limb and lower limb revealed, severe motor and sensory axonal neuropathy in both upper and lower limbs. She was treated for the same in Narayana Multispeciality Hospital Mysore, India with IV Immuno Globulin, multivitamins, other symptomatic medication and physiotherapy. For about ten days, the pain was reduced.

After ten days, once again, all the symptoms relapsed. The patient noticed that she was unable to open the bottle cap, button her sweater, her extremities were cold, she was unable to walk independently, severe pain in her bilateral calf muscles persisted throughout the day and night, patient failed to grasp the object tightly, and difficulty in holding pen and writing, her educational activities was getting hampered day by day, she also lost about 4 kg within one month. Her history revealed that she had a left pre-auricular sinus with previous abscess formation in 2016. So, for these complaints on 11/9/2021, she visited panchakarma OPD of SKAMCH and RC by walking with the support of Foot Drop Leaf Spring and the patient's mother, with a chief complaint of inability to walk without aid, pain in bilateral calf muscles and impairment in motor and sensory sensation since five months.

Table 1: Patients Chikitsa Vruttanta from contemporary medicine

Chikitsa Vruttanta
Tab Aceclofenac 100 mg and Paracetamol 1-0-1 (for 5 days)
Tab Etoricoxib and thiocolchicoside SOS
Tab Methylfolate, Methylcobalamin and pyridoxine 1-0-0 (2 months A/F)
Tab Paracetamol 500mg 1-1-1 (5days/sos a/f)
Tab Vitamin C 1-0-0 (1 month a/f)
Tab Trigabantin 100mg 0-0-1/2 1month a/f
Inj Methylcobamine 1000MCG, IM once in a week, six weeks after the test dose
IV Immunoglobin daily two injections for four days

Clinical Examination

On general examination, the patient's attitude was sitting with the hip flexed, lean by built and under nourished. The temperature was 98.6 degrees F; the Pulse rate was 82 beats /min; the respiratory rate was 18 cycles/min, and blood pressure measured 110/80 mmhg. height and weight measured 160 cm and 36 kg, respectively, whereas BMI showed 14.06 kg/m^2. Tongue remained uncoated; pallor is present, icterus, clubbing, cyanosis, lymphadenopathy, oedema absent.

Detailed Clinical Examination

Central Nervous System
Higher mental function- Intact
Cranial Nerves
CN - I Olfactory Nerve- Intact
CN - II Optic Nerve
The acuity of vision: Distal vision (DV)
Both eyes- 6/12 (p), Left eye- 6/18 (p), Right eye-6/24

- With spectacles, Distal vision (DV)
- Both eyes-6/6 (p), Left eye- 6/9(p), Right eye- 6/9(p)
- Near vision: Both eyes- N6, Right eye- N8, Left eye- N6

Colour vision - can be able to read Ishihara's test plate.

- Visual field - Intact
- Light reflex- direct light reflex and consensual light reflex are normal.
- Accommodation reflex - Intact

CN - III Oculomotor, CN- IV Trochlear, CN VI - Abducens Nerve- Intact

CN -V Trigeminal Nerve
Sensory

Table 2

	Right	Left
Light touch	Not perceived	Not perceived
Pinprick sensation	Perceived	Perceived
Temperature	Intact	Intact

Motor – Intact

Reflexes
- Jaw jerk: Present
- Corneal reflex: Present

CN - VII Facial Nerve and CN -VIII Vestibulocochlear Nerve, CN - IX Glossopharyngeal Nerve, CN-X Vagus Nerve, CN XI Accessory Nerve CN XII Hypoglossal Nerve- intact

Sensory System

Superficial
- Temperature: Intact in all limbs, except in bilateral lower limbs, delayed
- Pain: Superficial pain –not perceived in bilateral lower limb, Deep pain- Normal perception
- Touch: not perceived in bilateral lower limbs

Deep
- Touch: Intact in all limbs
- Pressure sense: Intact in all limbs
- Joint sense: Intact in all limbs

Proprioception
- Position: Affected
- Vibration: Affected
- Stereognosis: can be able to recognize the objects.
- Graphesthesia: can be able to identify in left and Right Upper limbs and could not be able to locate in lower limbs
- Two-point discrimination: able to identify Upper bilateral limbs and could not be able to identify the bilateral lower limbs
- Dermatomes affected are C6, L4, S1

Table 3: Motor System Examination

Muscle bulk	Right in cm	Left in cm
Upper limb		
Mid Arm	18.1	18
Mid Forearm	15.3	15.3
Lower Limb		
Mid-thigh	33	33
Mid-calf	26	26

Muscle tone: Right and Left Upper limbs, Left and Right Lower limbs are Hypotonic

Table 4: Muscle Power

	Right	Left
Lower Limb	3/5	3/5
Upper Limb	3/5	3/5

- Palmar grip- poor
- Pincer grip-poor
- Involuntary movements- Absent in both upper limbs and Lower limbs
- Gait- High Steppage gait

Table 5: Co-ordination test

Tests	Right	Left
Finger Nose Test	Possible	Possible
Heel Shin Test	Could not be able to perform	Could not be able to perform
Romberg's Test	Could not elicit due to weakness in b/l lower limbs	
Heel Toe Test	Could not elicit--due to weakness in b/l lower limbs	

Table 6: Reflexes

Superficial Reflexes	Right	Left
Corneal reflex	Present	Present
Abdominal reflex	Present	
Plantar reflex	Absent	Absent

Deep Reflexes	Right	Left
Biceps reflex	1+ (Normal)	1+ (Normal)
Triceps reflex	1+ (Normal)	1+ (Normal)
Supinator reflex	1+ (Diminished)	1+ (Diminished)
Knee jerk	1+ (Diminished)	1+ (Diminished)
Ankle Jerk	1+ (Diminished)	1+ (Diminished)

Spine Examination
Inspection
- Gait: Steppage gait
- Spine curvature: Normal curvature maintained.
- Visible scar swelling discolouration absent.

Palpation
- No tenderness
- Doorbell signs negative.

Movements: Flexion, Extension, Lateral rotation- Possible

Respiratory System
By Inspection- The shape of the chest is bilaterally symmetrical; chest movements are balanced, thoracic abdominal breathing, and Respiratory rate 18 times per minute**.**
By Palpation Trachea centrally placed, Chest expansion is proportional; Tactile vocal fremitus is Bilaterally symmetrical, Within normal limit.
By Percussion Resonant.
Auscultation Normal vesicular breathing sound heard. No added sounds.

Cardiovascular System
By Inspection-Chest bilaterally symmetrical. No scar marks, No visible pulsation or dilated veins in the chest.
Palpation Apical impulse palpable at 5th intercostal space medial to the midclavicular line.
Auscultation S_1S_2 heard; apical beat auscultated at 5th intercostal space medial to the midclavicular line, No added sounds.

Gastrointestinal System
By Inspection, Tongue uncoated, colour- pale, Oral hygiene maintained, no mouth ulcers, P/A: the shape of the abdomen: Scaphoid shape, Umbilicus centrally placed, No visible pulsation peristalsis or mass.
Palpation- No Organomegaly, No tenderness.
Auscultation-Bowel sounds heard 3/min

Assessment Criteria
- Hughes GBS Disability Scale- 3/6
- Foot and Ankle Ability Measure (FAAM): having subscales
  - Activities of Daily living subscale: 19
  - Sports subscale: 4

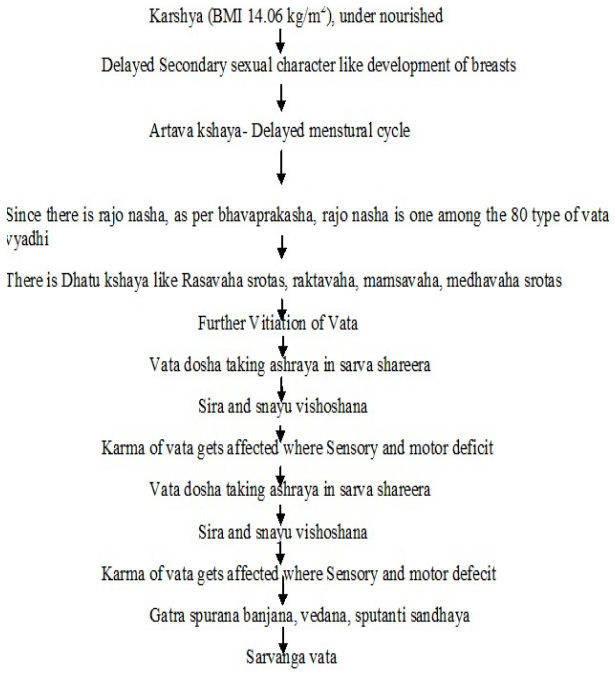
- Ankle Hind-foot Scale – 60

Investigations

CSF ANALYSIS- Cell count- WBC's -2 cells/ cumm; RBC,s-Occasionally, Lymphocytes – occasionally, Glucose - 56 mg/dl, Protein-43, Chloride - 121 mmol/L

Biochemistry Report- Serum bicarbonate level - 19 L mmol/L, RBS-113 mg/dl, BUN- 10mg/dl, S. creatinine - 0.5 mg/dl, Electrolytes-WNL, Phosphorus - 5.10 mg/dl

Nerve Conduction Study: Severe motor and sensory axonal neuropathy in the upper limbs and lower limbs



Samprapti

Therapeutic Intervention

- Sarvanga abhyanga with Mahanarayana taila
- Sarvanga shashtika shali pinda sweda with balamoola and Dashamoola kwatha
- Rajayana basti (Karma basti)
- Atasi Upanaha to bilateral foot

Orally

- Rasasindhoora 2 gm: 1 packet-0-1packet (30 packets)
- Tab. Ekangaveera Rasa (30): 1 packet-0-1packet (30 packets)
- Tab Brihat vata chintamani rasa (30): 1 packet-0-1packet (30 packets)
- Tab Mahayogaraja Guggulu (60): 1 packet-0-1packet (30 packets)
- Gandharva hastadi taila 20 ml with milk (E/S)

Advise on discharge

- Bhadradarvadi kashaya 3 tsp-3 tsp-3 tsp
- Swamala compound 1 tsp-0-1 tsp with milk
- Rasasindhoora 2 gm: 1 packet-0-1packet (30 packets)
- Tab. Ekangaveera Rasa (30): 1 packet-0-1packet (30 packets)
- Tab Brihat vata Chintamani rasa (30): 1 packet-0-1packet (30 packets)
- Tab Mahayogaraja Guggulu (60): 1 packet-0-1packet (30 packets)

Changes noticed Before and After treatment

Assessment Criteria

Before treatment

- Hughes GBS Disability Scale- 3/6
- Foot and Ankle Ability Measure (FAAM): having subscales
  - Activities of Daily living subscale: 19
  - Sports subscale: 4
- Ankle Hind-foot Scale – 60
- Reflexes +1

After Treatment

- Hughes GBS Disability Scale- 1/6
- Foot and Ankle Ability Measure (FAAM): having subscales
  - Activities of Daily living subscale: 78
  - Sports subscale: 9
- Ankle Hind-foot Scale – 75
- Reflexes 2+

Follow-up and outcomes

The patient was treated from September 2021 to May 2022. Active intervention for GBS was till January 2022 (154 days), during which period the patient had neurological deficits. And patient's follow-up observation was continued till May 2022 (269 days) as the patient had other symptoms like Pain in her foot.

Outcome on Sensory system findings like tingling and pricking sensation showed a reduction from the 13th day and to complete recovery by the 90th day. Numbness reduced from the 15th day and complete recovery by the 104th day. Muscle strength of all extremities showed a steady increase from grade 3 and complete recovery by the 110th day. Tendon reflexes improved from an areflexic state to near normal on the 30th day and to normalcy by the 140th day.

Clinical Assessment like Hughes GBS Disability Scale- 1/6, Foot and Ankle Ability Measure (FAAM): having subscales a) Activities of Daily living subscale: 78, b) Sports subscale: 9, Ankle Hind-foot Scale – 75, Reflexes 2+, All Neurological deficits were restored by 204th days of intervention.

The rationality behind Selection of Panchakarma Procedures

The basis for flaccid paralysis and sensory disturbance is conduction block in the demyelinating forms of GBS. The first attack on the Schwann cell surface caused widespread myelin damage, macrophage activation, and lymphocytic infiltration. If the axonal connections remain intact, the recovery will be faster as rapidly as remyelination occurs. Circumstantial evidence suggests that all GBS results from immune responses to nonself antigens (infectious agents /vaccines)[7]. By analysing the vyadhivruthanta (history of illness), nidana (aetiology), and lakshanas (symptoms) presented here, we have taken into consideration avaranajanya-vatavyadhisamprapthi and finally arrived at a final diagnosis as sarvangavata and started treating this particular condition. The treatment of GB syndrome, according to modern medicine, includes the usage of NSAIDs, tricyclic antidepressants, steroids, immunoglobulins, etc. Treatment, which is cost-effective and improves the patient's quality of life with nil or minimal side effects, is the need of the hour in this particular disease.

Table 7: Comparison of Guillain Barre Syndrome, Sarvangavata and manifestation in the patient

Textual Information of Sarvanga vata	Textual Information of Guillain barre syndrome (GBS)	Manifestations in the Patient
Pathogenesis- Morbid Vata increase (Vata prakopa) is associated with decreased tissue elements (Dhatu kshaya), an association of other doshas (Samsrusta dosha) like pitta and Kapha	Neurodegenerative disorder, autoimmune dysfunction	Heaviness (gurutva) and stiffness (stambha) of extremities. Suggestions of Kapha and Pitta involve Sarvangavata
Pitta association in pakshaghata produce an increase in body temperature (Santapa), and Kapha association cause heaviness (Gututvam and stiffness (stambha)		
Vitiated Vayu affects the right or left part of the body (Hatvikam marutaha paksham dakshinam vamameva va). It can affect the whole body in sarvangavata	GBS can affect the motor and sensory functioning of all limbs	Decreased power of both upper and lower limbs.
The difficulty of the movements (kuryat chesta nivrutti)	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 affected both lower limbs, and then both upper extremities were affected.
Pain (Ruja, toda, shoola) in the affected areas	Sensory deficits	Sensory deficits of pain, pricking, tingling sensation all over the body. Loss of sensations in soles and palm.
Speech deficits (Vakstambha)	Cranial nerve involvement resulting in facial, oculomotor, or bulbar Weakness.	Not affected
Sira and snayu gets effected in Sarvanga vata. Snayugatavata has features contracture deformity Siradusti can cause pain and loss of sensation	Paralysis or paresis may later develop to contractures and flexion deformities.	The patient had Severe pain and aesthesia.
Sarvangavata with pranavata dusti presents with karmendriya dusti like urinary incontinence	Autonomic dysfunction is common and may cause arrhythmias	-
It affects one part of the body or whole body; it is known as sarvangaroga (Ekangam tam vidhyat sarvangam sarvadehinam)	GBS presentations can begin with effecting single limb and spread to other limbs and the whole body	Affecting all four limbs, pain all over the body
Contractures in lower limbs (Padasankocha)	Muscle wasting and contractures	-
Apana Vayu abnormality	Autonomic dysfunction	
Prognosis- pakshaghata caused due to involvement of multiple doshas is curable	70-80% have complete recovery. 20-30% may have a persisting disability	Completely cured

There is no direct reference to this disease in our classics. But based on symptoms, the dosha and dushyas involved can be assessed, and accordingly, treatment can be provided. A predominance of vata dosha is very much appreciated in this particular disease. The definition of vata is "Vaagati gandhanayoh". Whereas gati is interpreted as motor and gandhana is interpreted as sensory functions of the nervous system by various Ayurvedic scholars. It is also interpreted that vata is the prime dosha that governs the nervous system. Manifestation of vata vyadhi is of two types, upastambhita and nirupastambhita, by analysing the above pathology and symptoms, most of which can be compared to kaphavruta vyana like vedana, sarva gatra guruta, sarva sandhi asthi ruja, gati sanga, klama, Based on this the treatment protocol is selected in the present study. Mainly in avarana conditions, avaraka dosha is treated first, i.e., kapha dosha, which shamanoushadhis do and then treatment for avruta dosha, i.e., vata dosha, for vatavyadhi, brimhana among shad upakramas is highly indicated. Once the disorder has developed, no therapy promises a reversal of the pathology or complete recovery. Yet, Panchakarma carries a ray of hope; not only can it improve the quality of life of the child and custodian, but it may help gift the sufferers better health. Panchakarma therapies like basti, abhyanga, shashiika shali pinda sweda and upanaha have their role in neurological disorders. Hence the above panchakarma treatment has been chosen for the patient.

DISCUSSION

Guillain-Barre syndrome (GBS) is an eponym for a heterogeneous group of immune-mediated peripheral neuropathies. A feature common in all GBS variants is a rapidly evolving poly radiculoneuropathy preceded by a triggering event, most often an infection. GBS manifests as symmetric motor paralysis with or without sensory and autonomic disturbances. The patient with GBS typically presents with weakness accompanied by tingling dysesthesias in the extremities. This weakness is prominent in the proximal muscles; legs are more often affected than arms. Paresthesias occur, spreading proximally but seldom extending past the wrists and ankles. Deep tendon reflexes disappear within the first few days of symptom onset.

As the natural course of the pathology cannot be altered by modern medicine, the scope of Ayurveda interventions in such nervous disorders has been increasing because of its holistic approach. Understanding such disorders from an Ayurveda perspective is the need of the hour. The nervous system and its disorders are described under the heading of vata vyadhi in Ayurveda. In Ayurveda, vatavyadhis are divided into two broad categories: diseases due to vishudha vata (vitiation of vata alone) and diseases due to avarana (blockage in the natural flow of vata by its types or by other dosa or dhathu or mala).

Abhyanga is a process by which the body surface undergoes manual pressure by various techniques and substances to provide relaxation to the body and alleviate several types of diseases. Skin is the body's gateway through which Abhyanga may act on different body systems. Absorption of drugs mainly occurs through the first (udakdhara) and second (asrigdhara) layers of skin. The oil used in abhyanga reaches up to the 6th layer (majja) in 900 matra kala (285 seconds). This layer mainly contains the nerve fibres, which by abhyanga gets nourishment to combat diseases due to vata[8]. Abhyanga increases blood supply to the area of application. It is recorded that amount of amino acids like tryptophan fairly increases in blood after performing a lymphatic

massage. This increased level of tryptophan in plasma may cause an increase in the level of several neurotransmitters and serotonin that helps an individual to fight anxiety, depression and many more. Abhyanga may influence the emotional status of an individual through tactile stimulation. tvak or sparshnendriya is the seat of vata, and abhyanga with oil alleviates the vitiated vata. A slow rhythmic Samvaltana with a light stroke can induce tranquillity. Aniilama gati (movement towards caudal direction) in the neck and back benefits the nervous system [9]. Thus, this therapy might prove helpful in neurological disorders by controlling vata to perform its physiological functions and stimulating the nervous system. In pathological conditions involving a tight and restricted state of fascia, myofascial release techniques like a gentle massage, deep pressure and tactile stimulation restore the normal status of fascia and impart flexibility to stretch and move without restriction.

Shashtik Shali Pinda Sweda (SSPS) is a type of sudation procedure performed by boluses of Shashtika shali (*Oryza sativa* Linn.) cooked with balamaala kivalha (decoction of *Sida cordifolia* Linn.) and milk.[10] SSPS may improve blood circulation (due to heat), relieve muscle spasms, and increase tendon extensibility.[11] Thus, it may help reduce spasticity and facilitate free movement to joints and may especially be beneficial in cases of spastic cerebral palsy. Shashtik shali possesses snigdha, guru and sthira properties; these anna are opposite vata's and thus may help pacify vata. Moreover, shashtik shali, bala and godugdha are balya in nature. Therefore, they may provide strength to the body.

Basti is a prime treatment modality for vata dosha. There is no treatment equivalent to Basti in the protection of marma and in managing their afflation, which are considered vital parts of the body. [12] It stabilizes the ayu (age) and normal functions of dosha (functional regulatory factors of the body) and dhatu (major structural components of the body). It may act through neuronal stimulation via the enteric nervous system (ENS). ENS, or the gut-brain, is an integrative system with structural and functional properties like the central nervous system. It lies entirely in the gut wall (mesenteric and myenteric plexuses), containing approximately 100 million neurons, equal to the number in the spinal cord. This makes the role of Basti in neurological disorders very clear. Basti reaches up to grahani. graltani possess piltadhara kala. As per Acharya Dalhana pittadhara kala and majja dhara kala are same. Thus, it can be interpreted that basti reaches up to majja. Moreover, being the best pacifies vata; it normalizes the functioning of vayu. Therefore, the role of basti in neurological disorders cannot be neglected.

The effect of **Upanaha swedana** has a broader scope of action, based on the dravya used, thickness etc. This can be explained as among the panchamahabhuta, vayu mahabhuta is mainly predominant in the skin. Hence the sparshindriya is capable of perceiving many different types of sensations. Bhrajaka pitta (one of the five types of pitta) is present in twak, and its function is twak bhrajana. Abhyanga and swedana applied externally are digested and processed by this bhrajaka pitta. Acharya Sushruta explains that the tiryak dhamani divides into numerous branches covers the entire body like a complex network, and their openings are attached to the roma koopa. Through the roma koopa, the virya of the lepa enters the body after undergoing paka by bhrajaka pitta in the skin. This is how the systemic absorption of drugs applied to the skin produces an effect; in essence, the virya of the drug used in upanaha swedana has the desired effect after absorption.

The absorption rate is directly proportional to the drug concentration in a vehicle, partition coefficient, diffusion coefficient and thickness of the stratum corneum. However, once the drug reaches the underlying tissues, it will be absorbed into circulation. The effect of upanaha is beneficial in treating gridhrasi as it involves the application of sneha mishrita ushna veerya dravyas, and it is made to stay over the affected part for a more extended time which in turn facilitates better absorption of the drug into the deeper tissues. The cox two inhibitory action helps reduce the shoola and shotha. The anti-inflammatory effect of the components in the salvana upanaha churna, along with the action of swedana, helps reduce symptoms. The analgesic property of the drugs brings about symptomatic relief in the symptoms. The vasodilatory effect of the swedana karma helps improve the local circulation at the joint.

Rasasindura (RS), a kind of kupipakwa rasayana, where kajjali (black lustreless powder) is prepared by levigating mercury and sulfur with prescribed herbal juices and then subjected to processing in a furnace for a prescribed time duration. According to the proportion of sulfur used in the process RS, there are different references available in classics, i.e. chturamsha [13] (1/4 part) to shadguna balijarita (6 parts) RS [14]. It has been claimed in the text that mercury treated with the process of gandhaka jarana becomes highly potentiated, i.e. it acquires many pharmaco-therapeutic properties [15]. Amounts of gandhaka jarana and agni are also responsible for enhancing the therapeutic properties of mercurial [16].

Ekangveer Rasa is a herbo mineral medicine; it constitutes bhasma as an ingredient, the most superior form of medicine. Bhasma is the most ancient form of administration of nanomedicine. In vatvyadhi, prakarana of nighantu Ratnakar Ekangveer Rasa has been mentioned for treating pakshaghata and other vatvyadhi.

Shudha gandhaka, shudha parada, shudha kanta loha bhasma, vanga bhasma, naga bhasma, tamra bhasma, abhraka bhasma, tikshna loha bhasma, nagaram, maricha, pippali. bhavana with vara (haritaki, amalki, bhibitaka),trikatu (nagara, maricha, pippali), nirgundi, chitrak, markav, shigru, kushtha, amalki, kupilu, arka, guduchi, aadraka. Due to its tikta rasa, laghu guna and ushna veerya, it performs the ama pachana effect in the body. Then it eliminates srotorodha (obstruction of body channels) due to ama and kapha. The properties of ingredients of Ekangveera Rasa would be instrumental in restoring the gati (motor activities) and gandhana (sensation). Symptoms of aggravated vata in vatavahasrotas and nadi such as cheshtanasha (loss of activities), sandhishaitilya (loosens of the joints), mukhavakrata (deviation of mouth), vakagraha (stammering of speech) and sagnynahani (loss of sensation) would be subsided.

Bhrihat Vata Chintamani Rasa has the ingredients like svarna bhasma, raupya bhasma, abhraka bhasma, lauha bhasma, pravala bhasma, mauktika bhasma, suta bhasma (rasa sindura), kanya (kumari) rasa q.s.(mardana) for one day having the properties like anti-inflammatory, analgesic and neuro protective[17]. Hence can be used in all inflammatory conditions related to the central nervous system.

Gandharvahasta taila causes mridu virechana (mild purgation). It cleanses the srotas (body channels), improving nourishment to body tissues. It helps in restoring the normal path (anuloma gati) of vata. Gandharvahasta taila contains eranda beeja (seed of *Ricinus Communis* L.) as one of the ingredients. Eranda is madhura (sweet), snigdha (unctuous), and ushna (hot) in properties, which are opposite to vata dosha[18]. It has anti-inflammatory and analgesic properties[19]. Eranda beeja has vidbhedana (purgative), srotoshodhana (channel cleansing), and

anulomana (the direction of vata in the right path) actions[20]. Acharya Charaka described it under bhedaniya and angamardaprashamana groups[21,22]. Eranda taila is indicated for mridu virechana in vata vyadhi chikitsa[20]. Sunthi *(Zingiber officinale* Roscoe), one of the ingredients of gandharvahasta taila, is ushna, snigdha, and pachaka (digestive). It pacifies vata and kapha and has analgesic and anti-inflammatory properties[23].

Mahayogaraja Guggulu contains nagara (sunthi), pippali, pippali mula, chavya, chitraka, hingu, ajamoda, sarshapa, sweta jiraka, krisna jiraka, renuka, indrayava (kutja), patha, vidanga, gajapippali, katuka, ativisa, moon bharangi, vacha, murva, haritaki, bibhitaki, amalaki, guggulu-shodhita, vanga bhasma, rajat bhasma, naga bhasma, loha bhasma, abhraka bhasma, mandura bhasma, rasa sindura. Yogaraj guggulu alleviates all three doshas and has rasayana (rejuvenating) action. It is indicated in the management of all vata rogas[24]. Guggulu possesses anti-inflammatory and analgesic actions. It prevents degenerative changes in bones and joints. It reduces inflammation, pain, and stiffness of joints.

CONCLUSION

Being childless is the major curse any couple can suffer. But having a child with a neurological disorder is also miserable. Thus, every effort should be made to raise awareness about the disease. Ayurveda management of GBS showed amelioration of motor and sensory deficits. Treatment with 30 days of various panchakarma procedures and oral administration of Ayurveda medicines for the next 140 days showed compete for recovery on all deficits. These treatments were safe and effective. Following the Ayurveda model of treatment stage-wise and customized approach have a beneficial effect. The outcome showed a significant role of Ayurveda in a severely debilitating disorder like GBS. Ayurveda management can decrease disability and improve quality of life.

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