

MANAGEMENT OF GUILLAIN BARRE SYNDROME/ धातुक्षयज

पित्तकफ संसृष्ट सर्वांगवात THROUGH AYURVEDA- A CASE STUDY

Dr. Ramesh Prasad Gupta^{1*} and Prof. (Dr.) B. B. Khutia²

¹Ph.D. Scholar, Dept. of Kayachikitsa, Gopabandhu Ayurveda Mahavidyalaya, Puri.

²Supervisor, Principal, Kaviraj Ananta Tripathy Sharma Ayurveda College & Hospital, Ankushpur, Ganjam, Orissa- 761100, Berhampur -University.

Article Received on
01 April 2019,

Revised on 22 April 2019,
Accepted on 12 May 2019,

DOI: 10.20959/wjpr20197-15065

*Corresponding Author

Dr. Ramesh Prasad Gupta

Ph.D. Scholar, Dept. of
Kayachikitsa, Gopabandhu
Ayurveda Mahavidyalaya,
Puri.

ABSTRACT

Guillain-Barré syndrome (GBS) is an acute, rapidly evolving are flexic motor paralysis with or without sensory disturbance. It occurs year around at arate of between 1 and 4 cases per 100,000 annually. Age is an important factor determining outcome, and prognosis. In children is said to be favourable as compared to adults. Direct correlation of GBS with Ayurvedic terminology is difficult. The presentation and *Doshadooshyasamoorchana* is considered first and then one should proceed with the treatment. Here a case of 50yrs old male presented with loss of strength in both the upper and lower limbs. Unable to get up, walk and stand brought to OPD of kayachikitsa department S.D.M.

College of Ayurveda, Udupi- Karnataka. He was provisionally diagnosed as a case of acute inflammatory demyelinating polyneuropathy. As per Ayurvedic classics, this condition we have taken as *Sarvangavata* (*Vata* affecting the whole body). Hence, the line of treatment we have adopted *Vatavyadhichikitsa* which included *Brihmanachikitsa* along with *Shamanoushadhis*. The outcome was very remarkable with the patient able to walk on his own.

KEYWORDS: Guillain-Barré syndrome (GBS), Demyelinating polyneuropathy, धातुक्षयज
पित्तकफ संसृष्ट सर्वांगवात |

INTRODUCTION

Guillain-Barre syndrome (GBS) is an acute; rapidly evolving is flexic motor paralysis with or without sensory disturbance.^[1] During the acute phase, and disability can be severe and can result in respiratory in-sufficiency and death. The usual pattern is an ascending paralysis that may be first noticed as rubbery legs. Weakness typically evolves over hours to a few days and is frequently legs are affected than arms. Several subtypes of GBS are recognized, as determined primarily by electro diagnostic and pathologic distinctions. The most common variant is acute inflammatory demyelinating polyneuropathy, axonal variants, which are often clinically severe either acute motor axonal neuropathy (AMAN) or acute motor sensory axonal neuropathy (AMSAN).^[2]

As per Ayurvedic classics this condition taken as धातुक्षयज पित्तकफ संसृष्ट सर्वांगवात which precedes *Jwara*. Hence the prime line of treatment was *Jwaraharachikitsa-Amapachana* for which we have selected *Shamanoushadhis* which contains *Guduchi* as a main ingredient, followed by *Vatavyadhichikitsa* it included *Abhyanga* (oleation therapy) and *Shashti shalikapindsveda* (sudation using hot *Shashtika* rice) along with *Matrabasti* (medicated oil enema) and other *Vataharashamanoushadhis*.

CASE REPORT

A 50 years old male Patient (*OPD No: 231938, IPD No.: 86252, Ward: MGW Ground Floor, Bed No.:20, Date of Admission: 07/09/2013*) presented with reduced strength in both upper and lower limbs since last 1month. Not a k/c/o of DM, HTN was asymptomatic 1 month 11 Day back. There patient visited by one of his friend said to be driver faced the same problem and treated in SDMCA, Udupi. They brought the patient to our hospital, on 06/08/13 patient got admitted under Dr. G. S. Acharya sir for the same compliant took treatment and got discharged on 22/08/13. On 07/09/13 patient got admitted again for the follow up treatment.

Loss of strength

- *Onset:* Sudden
- *Site:* Both upper & lower limbs.
- *Duration:* 1 week.
- *Character:* Non progressive
- *Severity :* Moderate Severe
- *Diurnal variation:* Nothing specific

- *Aggravating factor*: Nothing specific
- *Relieving factor*: Medication

Gained strength

- Progression: Gradual
- Site: Both upper & lower limbs.
- *Duration*: 1 month.
- *Character*: progressive
- *Diurnal variation*: Nothing specific
- *Helping factor*: Medication

PAST HISTORY

Patient was healthy a month before presentation of symptom. One day on 01/08/2013 at evening time patient felt heaviness in the lower limbs and tingling sensation in the upper limbs but he neglected it and after having Dinner he slept. Next day morning on 02/08/13 when he got-up, he felt loss of strength in both the upper and lower limbs. He tried to stand but he fell down. For the same complaint he consulted a nearby physician Dr.Sridhar Vaidya, at Shreyas Hospital. After examination he advised him to go Shivamogga for further management in higher center.

After consulting in NANJAPPA SUPER SPECIALITY HOSPITAL, SHIVAMOGGA they Diagnosed the case as AIDP (Acute inflammatory Demyelinating Poly Neuropathy) WITH EARLY FRESH DM and given Conservative Treatment, Referred him to Dept. of Neurology, NIMHANS, and Bangalore.

Treatment history

- On NANJAPPA SUPER SPECIALITY HOSPITAL, SHIVAMOGGA. They given Conservative Treatment IV Fluids – NS, INJ. – Lvepred/Nervigen/Omez and advised for IV Immunoglobulin/Plasmapheresis (But patient relative not willing for the same).
- On first admission in SDM hospital, Udupi 06/08/13 treated with, BVC with Gold 1-0-1, Lasuna Rasayana, Vestana with M.N. Taila, Tab. Herbolax 2hs. Discharge Medicine on 22/08/13 with following medications Cap. Nuro 1-1-1, Ksheera bala 101 10 ml./day at 6am, Tab. Dashmoolkatutradya 1-1-1, M.N.Taila for E/A, Trivritha Leha 8gm on 23/08/13 after end on Lasuna dose.

PERSONAL HISTORY

- Diet - mixed, more intake of non-veg. More food of spicy and fried items.
- Appetite – Good
- Bowel - 2time /day of normal colour and no constipation
- Urine - 5-6 times/at day time & 1-2 times at night time normal colour
- Sleep - Sound.
- Habits- alcohol consumption 1 peg approx 60 ml per day

EXAMINATION ON ADMISSION***Vital signs***

- Temperature - 98.4⁰F (oral)
- Pulse - 76/min Regular

Rhythm -- regular

Volume -- bounded pulse

- Respiratory rate -18/min
- BP - 110/70 mm of Hg. (on rt. Hand, Supine Position)

CENTRAL NERVES SYSTEM EXAMINATION**HIGHER MENTAL FUNCTIONS**

- Conscious level– fully conscious
- Orientation – Time, Place and person present
- Intelligence – Good
- Memory – Immediate, Recent and Remote are normal
- Hallucination, Delusion and Illusion – Absent
- Speech- Normal speech

CRANIAL NERVES

- 1st c.n: Sense of smell normal.
- 2nd c.n: Acuity of vision- Normal, visual field- normal, color vision-normal.
- 3rd, 4th, 6th: External ocular movement: normal, pupil normal.
- 5th: sensation over face- normal
- 7th c.n: On eye closure-Blinking of eyes, Frowning – possible, Raising eyebrows-possible, Showing teeth- Possible
- 8th c.n – Hearing peak of Watch- normal, Rinnes Test, Webers Test-normal

- 9th, 10th, 11th – Sensory Part of tongue superficial- normal, Palatile movement – normal, Shrugging of Shoulder – normal
- 12th c.n: Tongue movement – Can perform

Sensory system examination

Superficial: Touch - Normal sensation, Temp – normal, Pain – Normal

Deep: Crude touch, Vibration, Joint sensation, Position Sense, Pressure sense -Intact.

Motor system examination

1. Attitude of limbs: U.L: adduction and extension difficult and L.L: Knee and ankle not possible to flex.
2. Nutrition: The girth of UL- Arm and forearm -No wasting present and LL- Thigh and calf- Normal nutrition
3. Tone: Both UL & LL – Hypotonic and Spasticity & rigidity – absent on both sides
4. Muscle power: Bulk of the muscle – Equal on both sides

UPPER LIMB

A. Shoulder	Right	Left
Adduction	3	3
Abduction	4	4
Flexion	4	4
Extension	2	2
Rotation external & internal	70*	70*
B. Elbow	Right	Left
Flexion	4	4
Extension	3	3
C. Wrist	Right	Left
Dorsi flexion	2	2
Palmar flexion	2	2
Ulnar & radial Deviation	2	2
Supination & Pronation	2	2
D. Grip-weak	3/5	2/5

LOWER LIMB

E. Hip joint	Right	Left
Adduction	2	2
Abduction	2	2
Flexion	1	1
Extension	1	1
F. Knee	Right	Left
Flexion	3	3
Extension	4	4
G. Ankle	Right	Left
Dorsi flexion	2	2
Palmar flexion	3	3

Muscle wasting: No abnormality detected.

5. Co- ordination: UL Finger nose test: Not possible, Finger test: Not possible, LL Knee heel test: Not possible

6. Involuntary movements-Fasciculation, Tremor, Chorea, Athetosis, Hemibalismus- Intact

7. Gait: walking with Support

8. Reflexes: Superficial reflexes –Corneal, Pupillary, Abdominal reflex: Normal and Planter: both extension. Deep tendon reflexes - Upper limb Biceps, Triceps, Supinator jerk: Norm. Lower limb Knee and Ankle jerk: Normal

ASTHASTHANA PARIKSHA

- NADI: 76 times/min vataja kaphaja nadi (paravata gati)
- MALA: 2time/day, normal consistency
- MUTRA: Prakruta varna
- JIHWA: Nirliptata
- SHABDA: Prakruta
- SPARSH: Prakruta (anushna sheeta)
- DRIK: Prakruta
- AAKRUTI: Madyama

DASHAVIDHA PARIKSHA

- Prakruthi - Vata-pitta
- Vikruthi - Dosha- vata-kapha, Dushya – rasa, meda
- Desha - Jata : Anupa, Samruddha : Anupa, Vyadhita : Anupa
- Bala- madhyama
- Sara – madhyama

- Samhanana- madhyama
- Satmya- pravara
- Satva- madhyama
- Pramana – ht: 5'2'' wt : 55 kg
- Ahara shakti – Purva kalina- pravara, Adhyatana kala- avara
- Jarana shakti- purva kalina- pravara, adhyatana- avara
- Vyayama shakti- purva kalina- pravara, adhyatana kalina- avara
- Vayah- Madhyama
- Koshta- Madhyama
- Lakshana : Urdhwa adha shaka karma, chesta hani, saada, aruchi

निदान

आहारज निदान (Aharaja Nidana)

1. Mixed, more intake of nonveg.
2. More food of spicy and fried items.
3. More intakes of dry items.
4. Per Day Alcohol consumption

विहारज निदान (Viharaja Nidana)

1. More physical activities.
2. Standing for long time.
3. वेगधारण

मानसिक निदान (Manshika Nidana)

1. क्रोध
2. भय
3. सतत चिन्ता

पूर्वरूप -Patient felt heaviness in the lower limbs and tingling sensation in the upper limbs.

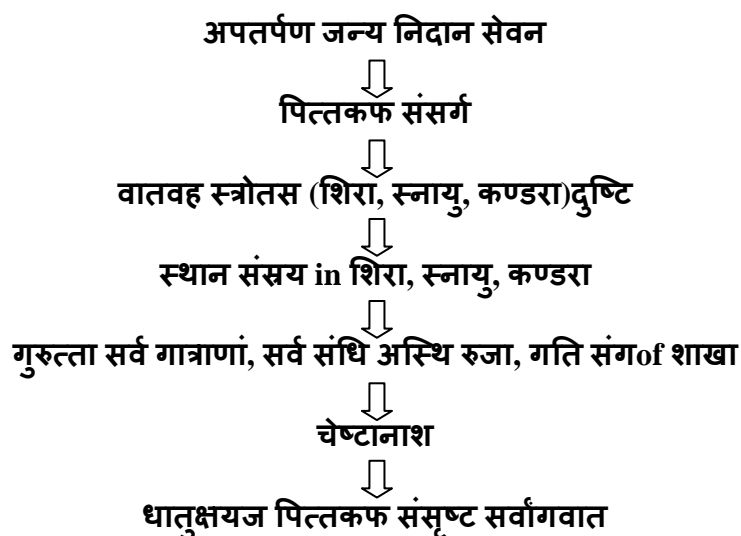
Aruchi and Agnimandya.

रूप – गतिसंङ्ग (That is hasta-pada karma hani), हस्त-पाद दाह, अति निद्रा, हस्त पाद गुरुता and रुजा

उपशय – औषध

अनुपशय – सर्व निदान

SAMPRAPTI



सम्प्राप्ति घटक

- दोष–Pitta-Kapha Samsarga Vyana Vata
- दूष्य–Dhatu: Rasa, Rakta, Mamsha, Medhash, Upadhatu : Sira, Snayu, Khandara
- स्रोतस् –Vatavaha Srotas, Chestavaha, Rasavaha, Mamshavaha, Medovaha
- स्रोतस् दुष्टि–Sanga
- अग्नि –Jhataragni, Dhatwagni
- आम–Jhataragni mandhya janita
- उद्भव स्थान–पक्वाशय^[३]
- सन्चार स्थान–सर्व शरीर
- अधिष्ठान–सर्व शरीर
- व्यक्त स्थान–Urdhwa adhaha shakha
- रोगमार्ग–मध्यम

- साध्यासाध्यता-कृच्छ्रसाध्य

INVESTIGATION

Routine Blood Investigation: at NANJAPPA HOSPITAL, SHIVAMOGGA on 03/08/2013)

Hb% -14.3gms%, Total WBC -12200 cells/cumm, Differential WBC, N- 93.3%, L-5.2%, M-1.5%, B- 00%, GRBS- 105mg/dl, Blood urea: 30.3mg/dl, Total RBC - 4.61 million/cu.mm.

Platelet Count -375000 cells/cu.mm, PCV - 42.5%, MCV-92.2%, MCH - 31.0 picogram MCHC - 33.6%,. Electrolytes (03/08/13): Sodium(Na+) 133 mg/dl, Potassium(K+) 4.30mg/dl, Chloride (Cl-) 111.0mg/dl. Urine examination: Albumin – Nil, Sugar - Nil, Microscopic Examination, Epithelial cells: 2-3/hpf, Pus cells:2-3/hpf, R.B.Cs.: 0-1/hpf. X Ray LS Spine AP & Lat.



Findings on 03/08/13

- There is normal lumbar lordosis without listhesis.
- Vertebral body height are normal, without compression fracture.
- Intervertebral disc spaces are relatively maintained.
- Anterior osteophytes are noted.
- Prevertebral soft tissues are unremarkable.

Impression: Mild Degenerative Changes.

ROUTINE BLOOD INVESTIGATION: (at sdmca, udupi on 07/08/2013)

Hb% -14.25gms%, Total WBC -8700 cells/cumm, ESR-28mm/hr, Differential WBC, N-78%, L-17%, E-04%, M-1%, B- 00%, GRBS- 80mg/dl, Blood urea :56mg/dl, Serum creatinine 1.2mg/dl, serum uric acid : 2.4mg/dl Total RBC - 4.3 million/cu.mm.

Platelet Count -3lakhs/cu.mm, PCV – 41.7%, MCV-96% fl, MCH – 32.9 picogram MCHC – 34.2%, RDW-13.8%. Urine examination: Albumin – Nil, Sugar – Nil.

Urine Microscopic Examination: Epithelial cells – 2-3/hpf, Pus cell - 2-3/hpf R.B.Cs. - 0-1/hpf, Lipid profile (on 07/08/2013) Total cholesterol : 188.0 mg/dl, Serum Triglycerides: 89.0 mg/dl, HDL Cholesterol : 53mg/dl, LDL Cholesterol :117 mg/dl. VLDL: 18mg/dl, TC/HDL Ratio : 3.9 mg/dl, LDL/ HDL Ratio : 2.5 mg/dl.

DIFFERENTIAL DIAGNOSIS

- Gullian Barre Syndrome
- Transverse Myelitis
- Multiple Sclerosis
- Myasthenia Gravis

DIAGNOSIS**CLINICAL DIAGNOSIS**

- Gullian Barre Syndrome.

(Acute Inflammatory Demyelinating Polyneuropathy).

ANATOMICAL DIAGNOSIS

- Demyelination Polyneuropathy.

PATHOLOGICAL DIAGNOSIS

- Peripheral Nerve Demyelination.

व्याधि व्यवच्छेद

- SARVANGAVATA
- KAPHAVRITA VYANA VATA
- PANGU
- PAKSHAGHATA

व्याधि निर्णय

धातुक्षयज पित्तकफ संसृष्ट सर्वांगवात

MANAGEMENT

चिकित्सा सूत्र

- सर्वाङ्गकुपितेऽभ्यङ्गो बस्तयः सानुवासनाः^[4]
- सर्पिस्तैलवसामज्जसेकाभ्यञ्जनबस्तयः ॥ स्निग्धाः स्वेदा निवातं च स्थानं प्रावरणानि च।
रसाः पयांसि भोज्यानि स्वाद्वल्लवणानि च॥ बृंहणं यच्च तत् सर्वं प्रशस्तं वातरोगिणाम्^[5]

PROGNOSIS

Krichrasadya

SADHARANA CHIKITSA

- Especially in Pittavruta and Kaphavruta Vata.

“अनभिष्यन्दिभिः स्निग्धैः स्रोतसां शुद्धिकारकैः । कफपित्ताविरुद्धं यद्यच्च वातानुलोमनम्॥

सर्वस्थानावृतेऽप्याशु तत्कार्यं मारुते हितम् । यापनावस्तयः प्रायो मधुराः सानुवासनाः॥

प्रसमीक्ष्य बलाधिक्यं मृदु वा संसनं हितम् । रसायनानां सर्वेषां उपयोगः प्रशस्यते ॥

शैलस्य जतुनोऽत्यर्थं पयसा गुग्गुलोस्तथा । लेहं वा भार्गव प्रोक्तमभ्यसेत् क्षीरभुङ्गरः ॥

अभयामलकीयोक्त एकादशसिताशनम्^[6]

Anabhishtyandi, Snigdha, Srotoshuddhikaraka-Ahara and Oushadhis. Yapana Basti, Madhura pradhana Basti, Anuvasana Basti. Acc to Rogibala and Rogabala Mruduvirechana. Rasayana prayoga, Shilajatu Prayoga. In the condition of kaphavruta Vata, the treatment of Kapha, which is Anulomana to Vata, Should be prescribed.

“उदानं योजयेदूर्ध्वं अपानं च अनुलोमयेत् । समानं शमयेच्चैव त्रिधा व्यानं तु योजयेत् ॥

प्राणो रक्ष्यश्चतुर्भ्योऽपि स्थाने ह्यस्य स्थितिर्ध्रुवा । स्वं स्थानं गमयेदेवं वृत्तानेतान् विमार्गगान् ॥”^[7]

Udana-should be regulated upwards. Apana- should be regulated downwards. Samana- should be pacified (shamayet). Vyana- by all the three above measures. Thus the various types of Vata that are occluded or misdirected should be established in their normal habitat.

Chikitsa

1. Dhanadanayanadi Kashaya
2. Maharasnadi kwatha
3. Balarishta
4. Balashwagandha
5. Yogaraja guggulu
6. Brahat vata chintamani rasa
7. Vatagajankusha rasa
8. Bharagava prokta rasayana

Treatment Given

In hospital on 07/09/13

- Cap. Nuro 1-1-1
- Vestana with M.N. Taila to both upper and lower limbs.
- Yastimadhu Rasayana on 08/09/13 – 10gm with milk at 6am OD, 09/09/13 – 20gm with milk at 6am OD, 10/09/13 – 30gm with milk at 6am OD, 11/ 09/13 - 40gm with milk at 6am for 1 Month same dose.

Pathya

- मधुर-अम्ल -लवण रस, स्निग्ध, सन्तर्पक, पाचक and अनुलोमन food are wholesome.
- रक्तशालि, गेहू, ज्वार, कुलत्थ, ग्राम्य and अनूप मांस, अजा मांस

Apathya

- आहार:- चणक, सुपारी, कटु-तिक्त-कषाय रस प्रधान भोजन
- विहार:- मैथुन, चिन्ता, रात्रिजागरण, श्रम, वेग-धारण

CASE SUMMARY

A 50 yrs old male, moderately nourished, normosthenic built, not a K/c/o HTN & DM, was apparantly normal 1month11 days back. On 1st Aug. 2013 at evening time sudden he felt heaviness in the lower limbs and tingling sensation in the upper limbs. Next day morning on 02/08/13 he felt loss of strength in both the upper and lower limbs. He tried to stand but he fell down. He consulted a nearby physician Dr.Sridhar Vaidya, at Shreyas Hospital. After examination he referred the case to Shivamogga for further management in higher center.

Patient got admitted there in NANJAPPA SUPER SPECIALITY HOSPITAL, SHIVAMOGGA they Diagnosed the case as AIDP WITH EARLY FRESH DM and given Conservative Treatment, even after 1 day Referred him to Dept. of Neurology, NIMHANS, Bangalore But patient not visited NIMHANS they come in our hospital and got admitted, under Dr. G. Shrinivasa Acharya sir for the same complaint hear base on proper history taking and Hematological Investigation patient Diagnosed धातुक्षयज पित्तकफ संसृष्ट सर्वांगवात /GULLIAN BARRE SYNDROME and took treatment and got discharged on 22/08/13. On 07/09/13 patient got admitted again for the follow up treatment.

Now patient treated with this medication

- Cap. Nuro 1-1-1
- Vestana with M.N. Taila to both upper and lower limbs.
- Yastimadhu Rasayana on 08/09/13 – 10gm with milk at 6am OD, 09/09/13 – 20gm with milk at 6am OD, 10/09/13 – 30gm with milk at 6am OD, 11/ 09/13 - 40gm with milk at 6am for 1 Month same dose.



Internally patient was administered

DISCUSSION

Conceptual analysis of GBS in Ayurveda

Pathology- In the demyelinating forms of GBS, the basis for flaccid paralysis and sensory disturbance is conduction block. First attack on schwann cell surface, 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 evidences suggests that all GBS results from immune responses to nonself antigens (infectious agents /vaccines).^[8] By analysing the *Vyadhivruthanta* (history of illness), *Nidana* (etiology), *Lakshanas* (symptoms) presented here we have taken in consideration of *पित्तकफ संसृष्ट* (pathology) and *धातुक्षयज Samprapthi* and finally arrived a final diagnosis as *धातुक्षयज पित्तकफ संसृष्ट सर्वांगवात* and started treating this particular condition.

GB syndrome done at Govt. Ayurvedic Hospital, Nagpur^[9] where managed with *Vatahara* as well as *Jwaraharachikitsa* for which medicines selected was *Candanbalalakshditaila* for *Abhyanga*, *nadisweda* with *Nirgundi* and *Dashamoola siddha kwatha* along with *Shashtikashalipindasweda* with *Balamula*, *Aswagandha churna* and *Shathavarichurna*. *Shirodhara* with *Tilataila*. *Kshira* processed with *Pittaharadravya* in the form of *Basti* was used and *Tilatailabasti* (sesame oil enema) was given on alternate days. *Brhatvatachitamani kalpa* which was composed of *Brhatvatachitamani guduci* (*Tinospora cordifolia*) *Sattva*, 30 g; *Rajatabhasma* 5 g and *Sutasekhara rasa* 30 tab each of 250 mg powdered together and divided into 60 divided doses BD was given as internal medicine. Patient was treated for a total of 36 days after which patient showed marked improvement in muscle power, gait, and reflexes.

One more case study done at SKAMCH & RC treated by selecting internal medication as *Gardabhapaya* in empty stomach along with *Shashtikashali Pindasweda* followed by *Nasya* with *Ksheerabalathaila* 101, *Rajayapana basthi* with *Brihath-chagalyatighrita* in *Kalabasthi* schedule, where patient showed marked improvement in gait, muscle power, muscle tone, reflexes and symptoms like tingling sensation.^[10]

CONCLUSION

The analysis of GBS in terms of Ayurveda concludes that the GBS is a symptom complex where we can't correlate particular Ayurvedic term, but based on the symptoms here we have taken as *धातुक्षयज पित्तकफ संसृष्ट सर्वांगवात*।

According to biomedicine, approximately 85% of patients with GBS achieve full functional recovery within several months to year.^[11] In this patient recovery was seen in one and half months, which is suggestive of quicker beneficial effects of Ayurvedic treatment. Along with the Ayurvedic *Vestana Chikitsa* as well as *Shamanoushadhis*. This case study not only gives us confidence and better understanding for treating such cases in Ayurvedic hospital but also leads in the direction of further clinical trials to establish cost effective Ayurvedic therapy. As immunoglobulin treatment is a costly alternative, cost effectiveness of the Ayurvedic treatment seems promising.

BIBLIOGRAPHY

1. Dennis L.Kasper, Harrison's principle of internal medicine, vol.2, 19th edition, pg-2694, pp-2770.
2. Ibid.
3. Agnivesha, Charaka Samhita, Ayurveda Deepika Commentary of Chakrapani, edited by; Vaidya Yadavji Trikamji Acharya, Choukambha Surabharati Prakashan, Varanasi, reprint-2011, Sutrasthana chapter 12, pg-79, pp-738.
4. Agnivesha, Charaka Samhita, Ayurveda Deepika Commentary of Chakrapani, edited by; Vaidya Yadavji Trikamji Acharya, Choukambha Surabharati Prakashan, Varanasi, reprint-2011, Chhikitsaasthana chapter 28, pg-621, pp-738.
5. Agnivesha, Charaka Samhita, Ayurveda Deepika Commentary of Chakrapani, edited by; Vaidya Yadavji Trikamji Acharya, Choukambha Surabharati Prakashan, Varanasi, reprint-2011, Chhikitsaasthana chapter 28, pg-621, pp-738.
6. Agnivesha, Charaka Samhita, Ayurveda Deepika Commentary of Chakrapani, edited by; Vaidya Yadavji Trikamji Acharya, Choukambha Surabharati Prakashan, Varanasi, reprint-2011, Chhikitsaasthana chapter 28, pg-627, pp-738.
7. Agnivesha, Charaka Samhita, Ayurveda Deepika Commentary of Chakrapani, edited by; Vaidya Yadavji Trikamji Acharya, Choukambha Surabharati Prakashan, Varanasi, reprint-2011, Chhikitsaasthana chapter 28, pg-626, pp-738.

8. Dennis L. Kasper, Harrison's principle of internal medicine, vol.2, 19th edition, pg- 2695, pp-2770.
9. Shilpa sree, Swati S. Deshpande, Baidyanath Mishra. Ayurvedic Management of Guillain-Barré Syndrome. AYUSHDHARA, 2014; 1(1): 50-54.
10. Nakanekar A, Bhople S, Gulhane H, Rathod S, Gulhane J, Bonde P. An ayurvedic approach in the management of Guillain-Barre syndrome: A case study. Ancient Sci Life, 2015; 35: 52-7.
11. Dennis L.Kasper, Harrison's principle of internal medicine, vol.2, 19th edition, pg-2698, pp-2770.