International Research Journal of Ayurveda & Yoga
Vol. 6 (2),22-26, Feb,2023
ISSN: 2581-785X:https://irjay.com/
DOI: **10.47223/IRJAY.2023.6204**

Management of "Bilateral Foot Drop" through Ayurveda- A Case Study

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Article Info

Article history:
Received on: 05-1-2023
Accepted on: 22-02-2023
Available online: 28-02-2023

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ABSTRACT:

Foot drop can be caused by paralysis of pretibial and peroneal muscles with resultant inabilityto dorsi flex the foot. The most common causes of foot drop are L5 radiculopathy and peronealnerve injury. Here a case of 74 year old man presented with weakness of both lower limbs andnumbness of both sole of foot since 10 years brought to OPD. He was provisionally diagnosedas a case of peroneal mono neuropathy, later diagnosed as a case of Bilateral Foot Drop. As per ayurvedic classics, we have correlated this condition as *Pangu*, a condition which is causeby vitiation of *Vata*. Hence the line of treatment we have adopted was *Vatavyadhi Chikitsa,* which comprises of *Amapachana* as well as *Balya* and *Brumhana Chikitsa* along with *Samanoushadhi.* The outcome was significant, that the patient was able to walk more confidently without the fear of falling.

Keywords: *Vatavyadhi Chikitsa,* Foot drop,*Vata*

INTRODUCTION

Foot drop is an inability to lift the fore foot due to weakness of dorsi flexors of foot. Foot drop can be caused by paralysis of pretibial and peroneal muscles, with resultant inability to dorsiflex the foot. The gait of patient with foot drop called stoppage or equine gait. Here the steps of patient will be regular and even, but the advancing foot hangs with the toes pointing towards the ground. Walking is accomplished by excessive flexion at the hip, the leg being lifted abnormally high in order for the foot to clear the ground. There is a slapping noise as the foot strikes the floor. Thus there is a superficial similarity to tabetic gait, especially in case of severe polyneuropathy, where the features of stoppage and sensory ataxia may be combined.[1] Foot drop can develop acutely or over days to weeks, depending on the etiology. It can also be complete or partial in severity. There may also be accompanying numbness or paresthesia present along the lateral leg, dorsal foot, and/or the first toe web space. Pain may also be present in traumatic cases but is not always present.[2] Foot drop occurs in disease that affects the peripheral nerves of legs or motor neurons in spinal cord, such as chronic acquired axonal neuropathies, Charcot- Marie tooth disease (peroneal muscular atrophy), progressive spinal muscular atrophy and poliomyelitis. It may also be observed in certain types of muscular dystrophy in which the distal musculature of limbs is involved.[3] The most common cause of foot drop are L5 radiculopathy and peroneal nerve injury. There was weakness of dorsiflexion of foot (foot drop) in all of the

116 cases of common peroneal neuropathy reported by Katirji and Wilbourn,[3] and numbness of the dorsum of foot was present in most cases.

Just above the popliteal fossa the sciatic nerve divides into the tibial nerve and common peroneal nerve (lateral, external, popliteal nerves). The later swings around head of fibula to anterior aspect of leg giving off superior peroneal nerve that provides musculocutaneous branches (to the peroneal muscles) and to the deep peroneal nerve. Branches of the latter supply the dorsi flexor of foot and toes (anterior tibialis, extensor digitorumlongus and brevis and extensor hallucislongus muscles) and carry sensory fibres from the dorsum of foot and lateral aspect of lower half of leg. Pressure during an operation or sleep or from tight plaster casts, obstetric stirrups, habitual and prolonged crossing of the legs while seated and tight knee boots are the most frequent causes of injury to the common peroneal nerve. The point of compression of nerve is where it passes over the head of fibula. Emaciation in patients with cancer or AIDS increase the incidence of these types of compression injuries. The nerve may also be affected in diabetic neuropathy and injured by fractures of upper end of fibula. For common peroneal neuropathy presentation history typically reveals a description of weakness in muscles supplied by the superficial and deep peroneal nerve with or without associated sensory complaints. Physical examination should exclude other possible neuroanatomical localizations such as Lumbosacral radiculopathy, lumbosacral plexopathy, sciatic neuropathy or polyneuropathy. The patients with foot drop are not troubled by a perception of imbalance, they fall mostly from tripping if carpet edges and corb stones. As per ayurvedic classics this condition can be taken as *Khanja* or *Pangu. Khanjatha* is a condition caused by vitiated *vata*, which is located in the region of *Kati* and cause drawing of *kandaras*. [4] When both legs are affected this disease is called *Pangu* and they have be enenumerated among eighty main disorders of *vata*. It originates at *Kati* due to the vitiated *Vata*, probably the *Katyasritavata*-that is, *ApanaVayu* is involved. [5] The manifestations like disturbance in urination and motion, loss of function and sensation, etc, could be attributed to *Vyana Vayu* and the *Apana Vaigunya*. Since the disease originates at *Kati*, the involvement of spinal cord cannot be ruled out. The definition of *vata* itself explains that the normal function of *Vata* is the regulation of motor and sensory systems. Therefore, vitiation of *Vata* leading tothe onset of a disease usually manifests as an impairment of function. *Dhatuksaya* and *Margavarana* are the two basic factors for the *Vataprakopa*. [6] Hence the treatment principle we adopted here was *Brumhana* and to take *Vatadosha* to its *prakruthaavastha.*

MATERIALS AND METHODS

Case study:

A 73 year old male patient came to OPD with symptoms weakness of both lower limbs and numbnessof both sole of foot since 10 years.

The patient was diagnosed with diabetes mellitus 4 years back and on medication since then. He also had a history of varicosities of lower limbs, duration 5 years and also had history of neck pain and low back pain 4 years back. He was normal up to his 63 years of age and then numbness gradually started. Initially it was only on 3rd toe of right leg and gradually devolved as numbness of sole of both foot and weakness of both lower limbs. He also complained of falling while walking without support, decreased sensation of both sole of foot and muscle cramps on both calf muscles.

Personal History:

- **Bowel** : Satisfactory
- **Appetite**: Good
- **Micturition**: 2 times/ night , 5-6 times / day
- **Sleep**: Sound
- **Habit**: Smoking (10 cigarettes per day)
- **Addiction**: Smoking (10 cigarettes per day)
- **Allergy**: Nil

Dasavidha pareeksha :

1. *Dosha and Dushya : Vatam , Asthi*
2. *Desham: Sadharanam*
3. *Balam : Madhyama*
4. *Kalam: Hemantha-Sisiram*
5. *Analam : Sadharanam*
6. *Prakruthi : VataKaphajaPrakruthi*
7. *Vayah : Vardhakyam*
8. *Satwa:AvaraSatwam*
9. *Sathmya : Sarva rasa sathmya*
10. *Aharasakthi: Madhyamam*

EXAMINATION:

Examination of Hip joint :

Inspection: no deformities

Palpation: no tenderness

Range of Movement-Table 1

Examination of ankle joint :

Inspection : Bluish discolouration on medial malleolus (b/l), swelling present

Palpation : no tenderness

Range of Movement: Table 2

SLR Test - Negative on both lower limbs

Gait : Steppage gait

Decreased sensation in the lower lateral leg and dorsum of foot

Tinel Sign : Positive (B/L) Table 3

Investigation:

Needle biopsy- Bone marrow on 11- 12-2021

Bone marrow shows mild increase in plasma cells (7%)

Nerve conduction studies:

Motor Nerve Conduction studies revealed a conduction block of Tibial nerve (Rt) across Extensor hallucis longus and Peroneal nerve (Lt) across Extensor digitorum brevis.

Sensory Nerve Conduction studies revealed a conduction block of Sural nerve (Lt) acrossankle

F-Wave Studies

It revealed absence of F-Wave for Tibial nerve(Rt& Lt) across Abductor Hallucis and forPeroneal nerve (Rt& Lt) across Extensor Digitorum Brevis . Clinical examinations lead to a preliminary diagnosis of peroneal mononeuropathy. Pointed questioning and observation of patient reveals that the patient was prone to habitualleg crossing. Family history for hereditary neuropathies was negative.

Intervention :

Internal medicines

1. *Guggulu tiktakam Kashayam* 15 ml *Kashayam* + 45 ml boiled and cooled water 6am& 6pm B/F
2. *Mandoora Vatakam* 1-0-1 A/F
3. *Mahamasha Tailam* 1tsp-0-1tsp with *Kashaya*
4. *Puthikaranjasava* + *Abhayarishta* 30ml-0-30 ml A/F (From 10-12-2022 to 02-01-2023)

***Panchakarma* procedures**

1. *Udwarthanam* with *Kolakukathadi Choornam* was done for 2 days
2. *Dhanyakizhi* (*Ruksha*) for 7 days
3. *Patrapotali sveda* with *Mahamashatailam* for 4 days
4. *Abhyangam Bashpa Sveda* with *Mahamasha taila* for 3 days
5. *Pizhichil* with *Mahamasha tailam* and *Nishosheeryadi tailam* for 6 days
6. *Shiro Abhyanga* with *Mahamasha Tailam* and *Niishosheeradi tailam* for 6 days

Discharge Medicine:

1. *Guggulu tikthakam kashayam* 15 ml *kashayam* + 45 ml boiled and cooled water 6 am& 6 pm B/F*6*
2. *Yogarajaguggulu* tab 1-0-1 with kashayam
3. *Mahamasha tailam* 5 drops , 2 times a day with hot water B/F
4. *Mahamasha tailam* for external application

ASSESSMENT-Table 4

DISCUSSION

Treatment continued for 23 days and then discharged. At the time of discharge patient got significant relief in his condition. The treatment we adopted here was *Vattavyadhi Cikitsa*, which include *Ama pachana*as well as*Balya* and *Brumhana Cikitsa* along with *Samanoushadhis. Guggulutiktakam Kashayam has* indication in *Vatavyadhi* and diseases of *Sandhi-Asthi-Majja*. Since *Vata dosha* and *Asthi Dhatu* are in *Asrayaasrayi Bandha* it helps to normalise *Vata* and also strengthens muscles and joints. [7] *Mandooravatakam* improves general health, since the patient is old age. Also it is indicated in *Urusthambha* and

Prameha. Mahamasha Taila is *Brumhana*in property and it includes drugs like *Rasna, Balamoola* which pacifies *Vata.* [8] *Poothikaranjasava* and *Abhayarishtab*gives *Agnideepthi* and improves *dhatwagnipaka* Since there was a condition of *Amathwa*the treatment started with *Udwarthanam*with *Kolakulathadichoornam* and *Dhanyakizhi. Udwarthanam* is *Kaphahara* and gives *Sthairyatwa* to body parts and according to *susrutha* it is *Vatahara. Kolakulathadi Choornam*has *Vatahara*property. *Dhanyakizhi*contain *Navadhanya. Navadhanya* are wheat (*Tritium aestivum),* rice (*Oryzasativa),red lentil(Lens culinaris),*green gram (*Vignaradiata),*Bengal gram (*Cicerarietinum),*white beans (*Phaseolus vulgaris),* black sesame (*Sesamum indicum),*horse gram (*Macrotylomauniflorum),*black gram*(Vignamungo).* Most of these drugs have *Vatahara*property and it is doe as *Rokshana* for *Amapachana. Patrapotalisweda* have *Vatahara* property and is done with *Mahamashataila* which have *Brumhana* property too. *Pizhichil*is a procedure of simply pouring *Taila*over body but it has a versatile effect on nervous system that it stimulate nerve endings. It also improves flexibility and strength of body. There is a similey that explains *Tailaprayoga* on body that how a dried wood become flexible without breaking by application of *Taila,* likewise human body. At lastwe have done Siro *Abhyangam with Tailam.* Since *Shiras* is *Uttamanga* and which controls all other *Karmendriyas* we ended by stimulating the functions of *Shiras.*

CONCLUSION

Foot drop can be due to disturbance at any central or peripheral location along the motor neural pathway that terminates in the dorsiflexor muscles of the foot, or at multiple locations in series. All these can be taken as a *Vikrutha avastha* of *Vata dosha* and the line of treatment was balancing *Vata* . This case study demonstrates that ayurvedic management may be useful in chronic and debilitating conditions like footdrop.

Acknowledgments- Nil
Conflicts Of Interest- Nil
Source of finance & support – Nil

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How to cite this article: Nasheeda P, P. K. V. Anand, Rahul "Management of "Bilateral Foot Drop" through Ayurveda- A Case Study" IRJAY.[online]2023;6(2); 22-26.Available from: https://irjay.com
DOI link-https://doi.org/**10.47223/IRJAY.2023.6204**

Table 1 Range of Movement

Movements	**Right**	**Pain - Right**	**Left**	**Pain - Left**
Flexion	Possible 5/5	Nil	Possible 5/5	Nil
Extension	Possible 5/5	Nil	Possible 5/5	Nil
Abduction	Restricted 3/5	Nil	Restricted 3/5	Nil
Adduction	Possible 5/5	Nil	Possible 5/5	Nil
Circumduction	Possible 5/5	Nil	Possible 5/5	Nil
Hip rotation	Possible 5/5	Nil	Possible 5/5	Nil

Table 2 Range of Movement:

Movement	**Right**	**Left**
Plantar flexion	Possible 5/5	Possible 5/5
Dorsi flexion	Restricted due to stiffness 2/5	Restricted due to stiffness 2/5
Abduction	Restricted due to stiffness 2/5	Restricted due to stiffness 2/5
Adduction	Restricted due to stiffness 2/5	Restricted due to stiffness 2/5
Inversion	Restricted due to stiffness 2/5	Restricted due to stiffness 2/5
Eversion	Restricted due to stiffness 2/5	Restricted due to stiffness 2/5

Table 3 Reflexes

		Right	Left
Reflexes	Ankle jerk	+	+
	Knee jerk	+	+
	Babinski sign*	No response	No response
Muscle tone	Upper limb	Isotonic	Isotonic
	Lower limb	Isotonic	Isotonic
Muscle strength	Upper limb	Grade 5	Grade 5
	Lower limb	Grade 3	Grade 3

Table 4 ASSESSMENT

Right	**Before treatment**	**After treatment**	**Left**	**Before treatment**	**After treatment**
Abduction ofHip joint	3/5	4/5	Abduction ofHip joint	3/5	4/5
Dorsi flexion of ankle joint	2/5	4/5	Dorsi flexion of ankle joint	2/5	4/5
Abduction ofankle joint	2/5	4/5	Abduction of ankle joint	2/5	4/5
Adduction of ankle joint	2/5	4/5	Adduction of ankle joint	2/5	4/5
Inversion of ankle joint	2/5	4/5	Inversion of ankle joint	2/5	4/5
Eversion ofankle joint	2/5	4/5	Eversion of ankle joint	2/5	4/5
Babinskisign	No response	Plantar flexion of toes	Babinski sign	No response	Plantar flexion of toes