Case Report

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AYURVEDA APPROACH IN CLINICAL DIAGNOSIS AND MANAGEMENT OF TRAUMA INDUCED ACUTE TRANSVERSE MYELITIS WITH SPECIAL REFERENCE TO KUKUNDARA MARMABHIGATA: A CASE REPORT

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ABSTRACT

Background: Acute Transverse myelitis is a rare, acute focal inflammatory disorder often presenting with rapid onset weakness, sensory deficits, and bowel/bladder dysfunction. Among varied causes, trauma is one significant cause for Acute transverse myelitis. A 27-year-old female with history of fall, came to Kayachikitsa OPD with complaint of inability to walk without support and reduced sensation in both the lower limbs associated with mild pain at low back region. She also complained of diminished bladder and bowel control. In Ayurveda, based on Hetu (~ cause) and Sthana Vishesha (~ pathological site) - this condition was diagnosed as Abhigata (~trauma) to Kukundara marma (~vital spot in low back region). Marmabhighata (~injury to Marma) being one among the Nidana (~cause) of Vatavyadhi (~disorders of Vata dosha) treatment was planned accordingly. Results: Observations were recorded timely. Structured Panchakarma (~five internal bio-cleansing therapies) protocol consisting of Sarvanga agnilepa, Virechana (~purgation), Sarvanga Shashtika Shali Pinda sweda, Kati Basti and Yapana Basti (~enema) along with oral medications were administered across 4 sessions over a span of 6 months. At the end of fourth session of treatment, patient was able to walk without support, while mild degree right foot drop and mild limping persisted. Conclusion: Acute transverse myelitis, is a demyelinating disorder. Panchakarma protocol provided promising results in improving motor and sensory functions along with bowel/bladder control. This case report is an approach to enhance awareness of Ayurveda in managing acute conditions and its mode of action for potential therapeutic benefits and improvement of overall quality of life.

Keywords: Acute Transverse Myelitis, Kukundara Marma, Marmabhighata, Mustadi Rajayapana Basti, Myelopathy, Trauma, Vatavyadhi.

INTRODUCTION

Acute transverse myelitis (ATM) – is a demyelinating disorder of Central Nervous system classified in ICD 10 Code G37.3.[1] Myelitis is a subset of myelopathy. Accurate diagnosis of transverse myelitis necessitates the exclusion of other conditions that can lead to either inflammatory or non-inflammatory myelopathy.[2] The overlapping progression and symptomatology of these disorders can complicate the diagnostic process and eventually therapeutics. Transverse myelitis generally affects the spinal cord at any level, but most commonly affects the thoracic region. The disorder transverses the spinal cord causing bilateral deficiencies. At peak deficit, 50% of patients are complete paraplegic with virtually all of the patients having a degree of bladder/bowel dysfunction. [3]

Among varied causes to myelitis, trauma to spine is one of the significant causes, which in Ayurveda can be related to Abhigata (~trauma). In this case, based on the site of trauma (to lower back region) and symptoms, it was diagnosed as Kukundara Marmabhighata. The term "Marma" literary communicates vital parts of the body. Marmabhighata (~trauma or injury to Marma) is likely to produce manifestations governed by the extent and the nature of injuries to the Marmas. Kukundara marma located on both the side of the Pristhavamsha (~vertebral column) and the lateral sides of the outer part of Jaghanasthi (~femur) is a Vaikalyakara (~causing disability) and Sandhi marma. Injury to same causes "sparshaagyanam adhakaye chesthaopaghatha" - Loss of sensation and movement in lower part of the body.[4] According to Hetu and Sthana Vishesha, Vata dosha plays a role in the pathogenesis of this condition. Additionally, Marmabhighata, identified as one of the Nidanas of Vata-vyadhi, and the manifestations in this case supports the adoption of Vata-vyadhi chikitsa (~management approach). Hence, comprehensive screening, detailed clinical history, relevant examinations and investigations are necessary for diagnosing complex disease conditions and to plan appropriate therapeutic approach.

Patient Information

A 27-year-old female, home maker, came to Kayachikitsa outpatient department, Government Ayurveda Medical College and Hospital, Mysuru, Karnataka with complaint of difficulty in walking and reduced sensation at both the lower limbs associated with mild pain at low back region. She also complained of reduced sensation and control on defecation and urination since 1 year. The above complaint began after she fell from a bike on May 9th, 2023. At the time, she was otherwise normal except for mild pain in the lower back region. 3 days later on May 12th 2023, she experienced sudden catch at lower back after attempting to rise from squatting position followed which within 15-20 minutes she had total loss of sensation at both lower limbs and hips making her unable to stand and walk without support. Soon after which she was admitted to regional hospital and was diagnosed with Acute Transverse Myelitis with paraplegia. She was advised

oral medications and physiotherapy. After 2 months of physiotherapy patient couldn't find any improvement, in August 2023 she consulted Yoga and Naturopathy hospital, Mysuru, Karnataka, where she took treatment for 5 months, following which she could walk only with support. Since February 2024 she is taking Ayurveda treatment. No history of any comorbidity. Appetite and sleep are normal. Bowel constipated (passage of stools once in 2/3 days, decreased sensation for control and perception of arrival of stool). Micturition – incontinence otherwise normal in colour, odour and consistency.

Clinical Findings

On examination, Vitals were stable. On neurological examination, higher mental functions, cerebellar function and function of cranial nerves were normal. She had profound weakness in both lower limbs with inability to walk without support. There was motor weakness with grade II, in both the lower limbs with restricted dorsiflexion of the foot. The deep tendon jerks were exaggerated with grade III in both the lower limbs. Loss of sensation, touch, temperature and pressure was noticed in both lower limbs. MRI T2 weighted screening of whole spine showed altered signals to the conus medullaris and distal thoracic cord from D11-L2 levels suggestive of Acute Transverse myelitis. The sensory and motor examination of both lower limbs are noted in Table 1.

Diagnostic Assessment

At the initial visit, routine investigations including a complete blood count, random blood sugar, liver function tests, and renal function tests were performed, all of which were within normal limits. Based on the patient's history, clinical examination, and MRI findings of the whole spine, a diagnosis of acute transverse myelitis due to direct trauma to the spinal cord was confirmed, characterized by lower limb paraparesis. In Ayurveda, purely based on cause and symptoms, it was diagnosed as a case of Kukundara Marmabhighata.

Timeline

Figure 1: Timeline of events.

Therapeutic Intervention

After observing all the Lakshana (signs and symptoms), Samprapati ghataka and based on the examination findings, treatment protocol for both Bahya and Abhyantara chikitsa were adopted in four sessions under admission over a span of 6 months. The procedures and Shamanoushadhi (~oral medications) along with duration and dose are presented in Table 2 and Table 3 respectively.

Table 1: Sensory and Motor examination of Both lower limbs, according to British Medical Research Council

Sensory			
		Right Lower extremity	**Left Lower extremity**
Pain and touch sensation		Grade S3	Grade S3
Motor			
Muscle tone			
Muscle power	Quadriceps	Grade 3	Grade 3
	Interossei	Grade 2	Grade 2
	Hamstrings	Grade 2	Grade 2
	Tibialis anterior	Grade 2	Grade 2
Deep tendon reflex	Patellar (knee reflex)	3+	3+
	Achilles tendon (ankle)	3+	3+
	Babinski sign	Positive	Positive
Muscle Bulk		Mild atrophy	Mild atrophy

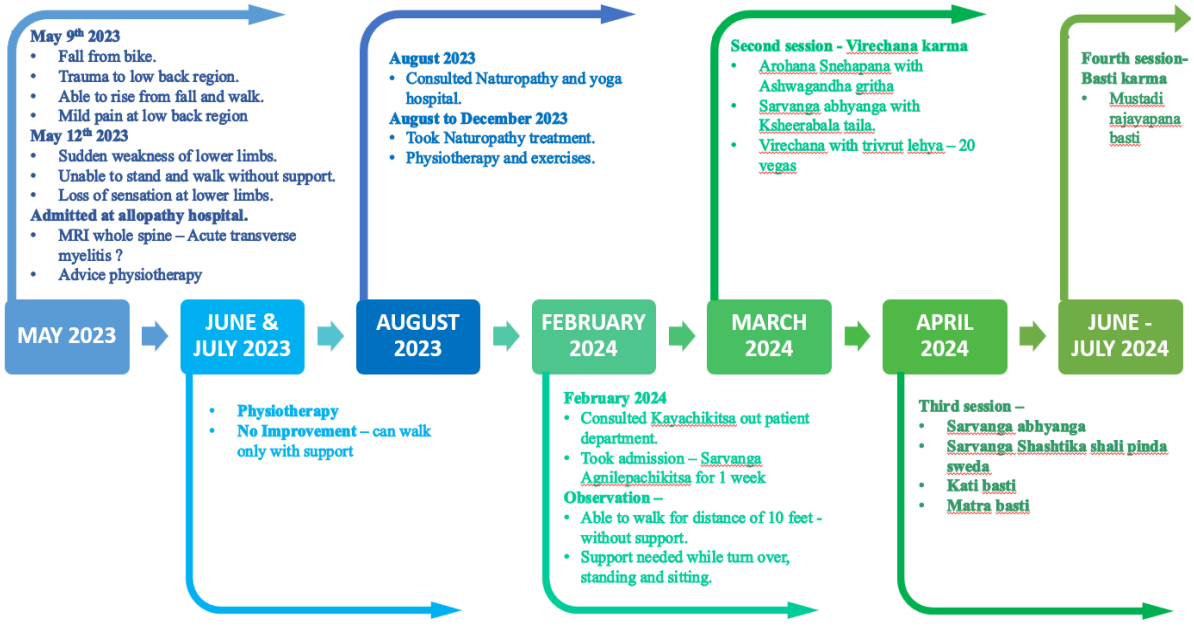

Figure 1: Timeline of events

Table 2: Therapeutic Interventions

Date	Procedure / Intervention	Duration and dose
First session		
13/2/2024	**Koshtashodhana** with Nimbamrutadi Eranda taila	40 mL
14/2/2024 – 20/2/2024	**Sarvanga Agnilepa Chikitsa**	7 days
22/2/2024 – 29/2/2024 (advised intake at home)	**Deepana pachana** Agnitundi Vati 1-1-1 with luke warm water in empty stomach before food for 1 week. Ajamodadi churna ½ teaspoon thrice daily with luke warm water in empty stomach before food for 1 week.	
Second session		
01/3/2024 – 9/3/2024	**Arohana Snehapana** with Ashwagandha ghritha.	Day 1 – 30 mL Day 2 – 60mL Day 3 – 90mL Day 4 – 120mL Day 5 – 150mL
	Sarvanga Abhyanga with Ksheerabalataila followed by bashpa sweda	3 days.
	Virechana with Trivrut lehya	1 day. Number of Vegas – 20
Third session		
26/03/2024 – 02/4/2024	**Sarvanga abhyanga** with Ksheera bala taila. **Sarvanga Shashtika Shali pinda sweda**	8 days
03/4/2024	**Koshtashodhana** with Nimbamrutadi Eranda taila	40 mL
04/4/2024 – 11/4/2024	**Kati Basti** with Murivenna taila and kottamchukkadi taila. **Matra Basti** – Ashwagandha Ghritha 60mL	8 days
Fourth session		
01/06/2024	**Koshtashodhana** with Nimbamrutadi Eranda taila	40 mL
02/06/2024 – 09/06/2024	**Sarvanga abhyanga** with Ksheera bala taila. **Sarvanga Shashtika Shali pinda sweda** **Matra Basti** – Ashwagandha Ghritha 60mL	8 days
26/06/2024 – 03/07/2024	**Yoga basti –** **Anuvasana Basti** – Ashwagandha Ghritha 70mL **Niruha basti** – Mustadi rajayapana basti with Mamsarasa avapa. Madhu-30 ml Saindhava-6gm Ashwagandha ghritha- 80ml Mustadi yapana kalka-12gm Mustadi yapana ksheerapaka- 300ml Aja mamsa rasa- 100ml	8 days

Table 3: Shamanoushadhi administered over time

Shamanoushadhi	Vata vidhwamsa rasa 1-0-1 after food with water. Ashwagandha churna ½-0-½ teaspoon after food with water. Brihat Vata Chintamani rasa 1-0-1 after food with water. Trayodashanga guggulu 1-1-1 after food with water. Ashwagandha churna ½-0-½ teaspoon after food with water. Navashawagandha syrup 2-2-2 teaspoon after food with water. Neurocare drops 10 drops-0-10drops self-administration early morning in empty stomach

Table 4: Assessment post treatment

Session	Observations
First session Koshtashodhana with Nimbamrutadi Eranda taila Sarvanga Agnilepa Chikitsa for 7 days.	Patient started walking without support. Mild support needed for rolling over, sitting and standing.
Second session Snehapana followed by Virechana karma	Patient walking without support. Left limb foot drop resolved to almost normal. Sensation and control over defecation and micturition improved.
Third session Sarvanga abhyanga Sarvanga Shashtika shali pinda sweda Kati Basti Matra Basti	Able to voluntarily sit and stand from chair without support. Sensation and control over defecation and micturition improved further. Muscle power (bilateral lower limbs) improved to grade 4. Pain and touch sensation (bilateral lower limbs) improved to Grade S3+.
Fourth Session Above treatments + Mustadi Rajayapana basti.	Regained complete Sensation and control over defecation and micturition. Muscle power of Left Lower limb improved to Grade 5. Pain and touch sensation (bilateral lower limbs) improved to Grade S4 Mild grade foot drop persists. Mild limping persists.

RESULTS AND DISCUSSION

After 4 sessions of treatment for a span 6 months, there were major relief from symptoms like difficulty in walking, sensory and motor deficits of both the lower limb. Observations were recorded timely. Efficacy was assessed through Subjective and Objective parameters, which has been tabulated in Table 4.

Patient is still on follow up at regular intervals. Status remains same as after fourth session of treatment. Following figures showcase the outcome of sequential treatment and improvement.

Figure 2: Patient status in May 2023 after trauma.

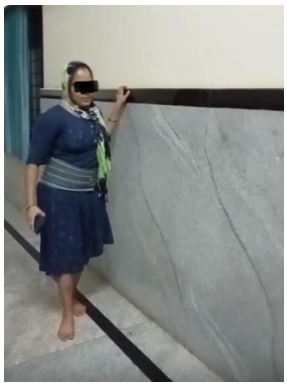

Figure 3: In February 2024 – before first session of Ayurveda treatment - Patient walking with support

Figure 4: In July 2024 – After Fourth session of treatment (Mustadi Rajayapana Basti) – able to walk without support, mild degree of right foot drop, mild limping and postural instability persists.

Figure 5: During follow up. Right foot drop almost resolved. Mild to no limping gait and postural stability achieved.

Discussion on Disease

Transverse myelitis (TM) is an inflammatory disorder of the spinal cord characterized by acute onset sensory loss and motor weakness below the level of the lesion.[5]

Abhighata (~Injury) to Kukundara Marma leads to "sparshaagyanam adhakaye chesthaopaghatha", characterized by a loss of sensation and impaired movement in the lower part of the body. According to Ayurveda, in this condition pathogenesis is predominantly influenced by Vata Dosha. Function of Vata is described as "Va Gati Gandhanyo" where, Gati refers to motor activities and Gandhana refers to sensory functions. Hence, assessing the Dosha bala and Vyadhi bala adopting Vata-vyadhi Chikitsa in this case was necessary.

Discussion on Therapeutic Interventions

The patient sought Ayurveda treatment almost 8 months after diagnosis.

To prepare body for subsequent treatments. Initially Koshtashodhana (~gut cleansing) was administered by Mrudu snigdha virechana with oral intake of 40 ml Nimbamrutadi eranda taila. Nimbamrutadi eranda taila is effective in correcting Prabala Vata and useful in Sandhi asthi majjagata vikruti.

Koshta Shodhana aids in Aama Pachana (~digestion of toxins), Agni Deepana (~enhancing digestive fire) and Vatanulomana (~restoration of normal Vata flow).[6]

Externally Sarvanga agnilepa chikitsa was done to relieve Dhatugata aama. Agnilepa is having drugs of Ushna Veerya, Ruksha – Teekshna and Ushna guna, Katu Rasa Pradhana dravya which are Shothahara, Stambhahara, Vedanasthapaka, Suptihara and have Vata kapha hara properties.[7] This treatment approach brought about a significant improvement in motor activity, enabling the patient to walk independently without support soon after first session of treatment.

After above treatment, based on Vyadhi avsatha, Sthana, Dushya and Lakshana (paraplegia, muscle wasting, atrophy, sensory and motor deficit at lower limbs) two approaches were considered

1. Based on Sthana and Lakshana - Pakshaghata chikitsa (~paralysis treatment) that is Snehana, Swedana and Shodhana (Virechana) were adopted.[8]
2. Considering Vyadhi avastha and Dushya involved - Dhatukshaya janya Vatavyadhi chikitsa ~ Santarpana chikitsa like Shastika Shali pinda sweda, Kati Basti, Mustadi Rajayapana basti were included.

In the Second session of treatment, Snehana in the form of Arohana snehapana with Ashwagandha ghritha (Nadibalya, Vatakaphahara and Rasayana) and Sarvanga Abhyanga with Ksheerabala taila were administered. Following this Shodhana via Virechana was done.

During third session of treatment, Shashtika shali pinda sweda was adopted to address the muscle atrophy in the patient. It is a variety of Snigdha bruhmana Sweda, Swedana by shastika shali dipped in balamoola kwatha with godugdha increases the blood flow locally, relieves muscle spasm and provides pain relief. Bala absorbed locally provides nourishment to muscular tissue and counters emaciation.[9] Shashtika shali with bala and ksheera increases the muscle bulk by the principle of "samanyam vriddikaranam".[10]

Locally, Kati Basti was done with Murivenna taila and Kottacmchukkadi taila. Katibasti is a type of Snigdha Sweda (~oleation-based sudation therapy) that provides significant therapeutic benefits in spinal injuries or Abhighata. The application of warm medicated oil over the lower back calms sensory neuron endings, induces vasodilation, and enhances local perfusion. This improves blood flow, promotes neuronal stimulation, and facilitates the delivery of nutrients to the injured area, aiding in tissue repair and regeneration. The therapy also alleviates pain and muscle spasms associated with spinal injuries by reducing inflammation and improving the flexibility of the skin, muscles, tendons, ligaments, and articular capsules. Additionally, the heat stimulates local metabolic activity, supporting cellular repair and reducing stiffness, thereby promoting faster recovery and improved mobility in spinal pathologies.[11]

Here, Murivenna taila was chosen as it is commonly indicated and practiced in Abhighatajanya shopha (~inflammation due to acute injuries), Shopha in Sandhi (~Joint inflammation), Asthi bhagna (~fracture) and Sandhi chyuti (~dislocation).[12] Kottacmchukkadi taila was also used which is Vataprashamaka, Sthambha hara and Vedana shamaka.[13]

Along with the above protocols, in the fourth session of treatment - one episode of Mustadi Rajayapana Basti was administered. "Basti Vataharanam sreshta"- Ayurveda Enema therapy is best for Vata disorders.[14]Yapana Basti is highly effective in pacifying Vata Dosha and possesses Rasayana properties, allowing it to be administered for extended durations without adverse effects. Mustadi Rajayapana Basti, exhibits both Shodhana (~cleansing) and Brimhana (~strengthening) actions. Its unique attribute, "SadyoBalajanana" (~immediate strength enhancement),[15] makes it particularly effective in this case. Discussing on the probable mode of action, Tikta Rasa (~bitter taste) of its components supports the regeneration of Asthi Dhatu (~bone tissue) and Majja Dhatu (~bone marrow) promoting nerve repair and spinal tissue regeneration. Ksheera (~Cow's milk) with its Madhura (~sweet), Guru (~heavy), and Jeevaneeya (~life-enhancing) properties, can help in reducing inflammation. Sukshma (~subtle) and Tikshna (~penetrating) properties of Saindhava lavana (~rock salt) enhance drug delivery to deeper tissues, supporting recovery from nerve damage. Ghee pacifies Vata and Pitta, promoting strength and reduce inflammation. Mamsa Rasa (~meat soup), rich in proteins, is effective in managing Mamsa kshaya (~muscle atrophy).[16] Hence, this formulation helped in correcting muscle wasting, sensory loss and weakness, while its immunomodulatory effects possibly improved strength, reduced spasticity, and accelerated healing in spinal pathologies.

Along with above therapies, a combination of internal medications were also administered like Brihat Vata Chintamani Rasa, Vata Vidhwamsa Rasa, Navaashwagandha Syrup, and Neurevive tablets.

Brihat Vata Chintamani Rasa and Vata Vidhwamsa Rasa pacify aggravated Vata, the primary dosha involved, likely promoting nerve regeneration and reducing inflammation. Navaashwagandha Syrup acts as a Rasayana (~rejuvenator), likely enhancing muscle strength, immunity, and vitality. Tablet Neurevive complements these actions by supporting neural repair and improving sensory and motor functions. Possibly, a combination of all these therapies and formulations addressed the underlying Vata imbalance, aided in tissue repair, and restore functionality breaking the pathology at different levels.

CONCLUSION

In this case, Acute Transverse Myelitis (due acute spinal cord injury) was compared to Kukkundara marmabhighata. Kukkundara marma being a Vaikalyakara marma leads to prolonged disability. Assessing the Dosha bala (~strength of dosha), Vyadhi avsatha and Lakshana (~stage of disease progression and symptomatology) combination of Bahya (~external) and Abhyantara (~internal) therapies were adopted. Considering the patient's current progress and sequential improvement (from being unable to walk to walking independently), it can be concluded that Ayurvedic management has proven to be remarkably transformative.

Patient perspective

The patient reported significant improvement after the first session of treatment (Koshta Shodhana and Agnilepa Chikitsa), as she was able to walk without any support. Her quality of life improved notably. After the third and fourth sessions, she regained the ability to sense and control micturition and defecation, and felt more energetic both physically and mentally. The patient expressed high satisfaction with the affordable treatment. Although a slight limp remains, she is now socially and emotionally confident.

Declaration of patient consent

The authors confirm that they have obtained a signed patient consent form, in which the patient has given consent for the case to be reported, including images and other clinical information, in the journal. The patient understands that their name and initials will not be published, and reasonable efforts will be made to protect their identity; however, complete anonymity cannot be guaranteed.

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