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Case Report

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Rehabilitation in Paraplegia with Transverse Myelitis Using a Combination of Physiotherapy, Panchakarma and Acupuncture: A Case Report

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Abstract

Transverse myelitis includes a pathobiologically heterogeneous syndrome characterized by acute or subacute spinal cord dysfunction resulting in paresis, a sensory level, and autonomic (bladder, bowel and sexual) impairment below the level of the lesion. Transverse Myelitis presenting with rapid onset paraplegia with bowel bladder involvement and spinal shock is associated with highly poorer prognosis. Authors wish to present one such case having history of Transverse Myelitis with paraplegia with bowel & bladder dysfunction with spinal shock at presentation who had come 15 days after onset of weakness for rehabilitation. After 5 sessions of unique therapy comprising of Physiotherapy, Ayurvedic Panchakarma & Acupuncture, she recovered totally and is leading a regular life.

Keywords: Transverse Myelitis, Paraplegia, Physiotherapy, Ayurvedic Panchakarma, Acupuncture, Rehabilitation

Introduction

Acute transverse myelitis (ATM), first described in 1882, is a rare, immune-mediated inflammation of the spinal cord affecting people of any age, race, or gender Transverse myelitis (TM) includes a pathobiologically heterogeneous syndrome characterized by acute or subacute spinal cord dysfunction resulting in paresis, a sensory level, and autonomic (bladder, bowel, and sexual) impairment below the level of the lesion [1-4]. Generally occurring independently; often as a complication of infection; however, it may also exist as part of a continuum of other neuro-inflammatory disorders. Some of the included continua are acute disseminated encephalomyelitis, multiple sclerosis, neuromyelitis Optica spectrum disorder, and acute flaccid myelitis. TM generally occurs at the spinal cord at any level, but most commonly affects the thoracic region [5]. The disorder transverses the spinal cord causing bilateral deficiencies. However, there may only be partial or asymmetric involvement. The duration of this disease may be as little as 3 to 6 months or may become permanently debilitating. At peak deficit, 50% of patients are complete paraplegic with virtually all of the patients having a degree of bladder/bowel dysfunction [6]. Approximately 33% of patients recover with little to no lasting deficits, 33% have a moderate degree of permanent disability, and 33% are permanently disabled [6]. Although rare, acute transverse myelitis can have devastating neurologic effects with up to two-thirds of patients having a moderate to severe degree of residual disability [7].

Case Report

A young lady aged 29 years presented with history of acute onset paraplegia with bowel & bladder dysfunction since 15 days for which earlier she was admitted in a private hospital for 5 days & was discharged with same condition. On examination she had paraplegia [both lower limbs 0/5], bowel and bladder dysfunction, tingling & numbness of both lower limbs with sensory level at D 10. There was no history of fever, trauma, vomiting. No history of SARS COV 2 infection, No history of recent vaccination. She was conscious & oriented, her higher functions were normal, no cerebellar signs, no signs of meningeal irritation, speech was normal, no facial asymmetry, no visual disturbance, breathing was normal, no weakness of upper limbs, Superficial sensations were decreased, abdominal reflex, knee reflex and ankle reflex were absent. Her initial MRI spine screening revealed Mild disc bulges at C3-4 to C5-6 level indenting subarachnoid space & abutting nerve roots, mild canal & mild to moderate foraminal narrowing aggravated by periodical osteophytes. MRI Brain revealed normal functioning. Her blood reports were as follows- Hb-11, RBSL-116, Thyroid Function Tests-Normal, serum creatinine-0.94, serum electrolytes-Normal. NMO antibody-Negative, MOG antibody-Negative, ANA-negative, HIV-Not Reactive, HBSAG-Negative, HCV-Negative. She was not willing for a dedicated MRI of Dorso-Lumbar spine & lumbar puncture for CSF examination. With history, clinical examination & available reports she was diagnosed as a case of Acute Transverse Myelitis-D10 level with spinal shock. She was given

injection Methyl Prednisolone for same for 5 days while she was admitted in a private hospital.

We started her a unique therapy combining Physiotherapy, Ayurvedic Panchakarma and Acupuncture. It was a 10 days session of this unique rehabilitation therapy. We gave her such 5 sessions 20 days apart. After 5 such sessions we noticed motor power in both lower limbs recovered fully, bladder and bowel functions restored back to normal and she is living an independent and regular life now.

Physiotherapy

Physical therapy can help reduce spasticity, retain muscle strength and flexibility, improve co- ordination, regain greater control over bladder and bowel function, and increase joint movement.

Physiotherapy approaches to intervention for courses 1-5 included a tailored exercise program. At an initial stage for course 1 following exercises were given -

Session 1:

1. Relaxed passive movements (B/L)
2. Positioning to prevent bed sores
3. Breathing exercises.
4. Electrical muscle stimulation, both lower limbs for 20 minutes.
5. Pain management -IFT (low back) 8 mins
6. Proprioceptive neuromuscular facilitation (PNF) of all limbs.
7. Bridging
8. Static Back
9. William flexion exercises
10. Sensory PNF for superficial sensations.

Session 2:

1. Relaxed passive movements (RPM)
2. Positioning
3. Breathing exercise's
4. Weight cuffs (B/L SLR)
5. Weight cuffs (Dynamic quads)
6. Weight bearing exercises (sitting).
7. Stretching exercises -TA stretch, HAMS stretch & FABER stretch
8. Finger exercises / Grip exercises
9. Heel exercises
10. Bridging

Session 3:

1. Weight cuffs (B/L UL and LL)
2. Strengthening Exercises for Both upper limb and lower limb
3. Chair exercises (Otago program)
4. Co-ordination exercises
5. Equilibrium and Non-equilibrium exercises

Session 4 and 5: Continue the same tailored exercise program. for further course along with Additional exercises including -

1. Sit to Stand
2. Quadripod
3. Supported standing
4. Trunk strengthening exercises
5. Wand exercises
6. Skate exercises

Ayurvedic Panchakarma

Ayurveda focuses on maintaining health by balancing the three physiological forces of the body (Doshas) - Vata, Pitta , and Kapha. Panchakarma is a treatment program for the body, mind and consciousness that cleanses and rejuvenates. It is based on Ayurvedic principle that every human being is an unique phenomenon manifested through the five basic elements of Ether, Air, Fire, Water and Earth. Combination of these elements is 3 doshas (Tridosha)-Vata, Pitta and Kapha, and their balance is unique to each individual. When there is imbalance of doshas, it results in disease or disorders.

Panchakarma is done individually for each person with their specific constitution and specific disorder in mind, thus it requires close observation and supervision. Treatment starts with pre- purification measures of Snehan & Swedan followed by Pradhan Karma according to disorder. In this case she was given Snehana, Nadiswed, Kati basti, shirodhara with Anuwasana basti & Niruh basti for alternate days.

- **Snehan:** Snehan refers to the massage of medicated oil over whole body for a specific period.
- **Swedan:** Swedana, means to "perspire". It is also known as steam therapy.
- **Shirodhara:** Shirodhara is a classical and a well-established ayurvedic procedure of slowly and steadily dripping medicated oil or other liquids on the forehead. This procedure induces a relaxed state of awareness that results in a dynamic psycho-somatic balance.
- **Kati Basti:** Kati Basti involves retention of warm thick medicated oil over the lower back
- **Basti:** Basti is the introduction of herbal decoctions and medicated oils into the colon through the rectum.

Acupuncture Therapy

It is a traditional Chinese therapy which explains acupuncture as a technique for balancing the flow of energy or life force-Known as Chi or qi (Chee) -believed to flow through pathways (Meridians) in our body. Acupuncture involves the insertion of very thin needles through our skin at strategic points on our body. By inserting needles into specific points along these meridians, our energy flow gets rebalanced, achieves equilibrium of Yin and Yang which ultimately helps in curing disease and restoring health.

- In first session of Acupuncture Therapy she was given Acupuncture at following meridian points- GV 20, ST 31, ST 32, ST 34, ST 36, GB 34, UB 60, ST 44, K 3, ST 41, SP 6, CV 2, CV 4 CV 6, LI 11, LI 4.
- Second session onwards she was given following meridian points -GV 20, UB 27, UB 28, UB 29, GB 30, GB 31, UB 36, UB 40, UB 57, UB 60, GV 14, UB 11, GV 6, GV 4, GV 3.

Discussion-Etiology

There are multiple causes of transverse myelitis, but they can be broadly divided into idiopathic, post-infectious, systemic inflammation or multifocal central nervous system disease [8]. The most common cause of TM is idiopathic and there is no causative factor found. Infections leading to TM include, but are not limited to, enteroviruses, West Nile virus, herpes viruses, HIV, human T-cell leukemia virus type 1 (HTLV-1), Zika virus, neuroborreliosis (Lyme), Mycoplasma, and Treponema pallidum [9]. Some of the acquired central nervous system autoim-

mune disorders include multiple sclerosis, neuromyelitis optica spectrum disorder, and acute disseminated encephalomyelitis. Neurosarcoidosis and paraneoplastic syndromes also have been reported to have an association with TM. Systemic inflammatory autoimmune disorders that have an association with TM include ankylosing spondylitis, antiphospholipid syndrome, Behçet disease, mixed connective tissue disease, rheumatoid arthritis, sarcoidosis, scleroderma, Sjögren syndrome, and systemic lupus erythematosus [10-12].

Epidemiology

Transverse myelitis can affect men and women equally. Women tend to predominate those associated with multiple sclerosis [13]. TM can affect patients of all ages, but it has spiked occurrences around the age of 10, 20, and over 40 years. There is a bimodal peak between ages 10 to 19 and ages 30 to 39 [14].

The incidence of transverse myelitis is approximately 1 of 8 new cases per 1 million people per year [15]. There did not appear to be differences in occurrence between Euro/American-born and Afro/Asian-born populations [15]. According to one case series, 64% of cases were idiopathic (primary TM) in nature, and 36% were associated with a disease (secondary TM).

Other reports include idiopathic TM accounting for 15 to 30% of cases [16].

Treatment

There is currently no effective cure for TM, and available therapies aim to alleviate symptoms by attenuating spinal cord inflammation as well as immune-mediated destruction of myelin [4]. If the acute phase of ATM is detected, initial immunotherapy aims to cease disease progression [18]. First-line standard anti-inflammatory treatments include high-dose of IV corticosteroids such as methylprednisolone or dexamethasone. Additionally, second-line treatments include plasma exchange and IV immunoglobulin, which are reserved as rescue therapies for steroid unresponsive patients [17-19]. The response of TM to corticosteroid therapy is usually disappointing [20, 21]. In general, one-third of patients with idiopathic acute transverse myelitis recover with little or no sequelae, one-third are left with a moderate degree of permanent disability, and one-third have severe disabilities. Spinal shock at presentation is highly predictive of a poor outcome. Interestingly, a higher CSF glucose level (related to higher serum levels) may portend a poorer outcome [20]. Bladder dysfunction remains one of the most common and disabling consequences of TM [22]. UTI is the most common medical complication in myelopathic patients [23]. Despite complete motor recovery following TM, bladder dysfunction often persists [24].

Prognosis

Most patients with idiopathic transverse myelitis should at least have a partial recovery. This recovery should begin within 1 to 3 months and should continue to progress with exercise and rehabilitation therapy [24]. Recovery may take years, and some degree of persistent debilitation may exist. This occurs in approximately 40% of cases [8]. Rapid onset with complete paraplegia and spinal shock is associated with poor prognosis. Early integration of therapies in acute inpatient stay and continuation of this during the rehabilitation phase can help improve outcomes. In patients who are going to make a meaningful recovery, independence is best achieved with intensive Physical Therapy and Occupational Therapy to regain lost function.

Thrust of neuro rehabilitation for the patient is to have optimal functioning and independence in daily activities, as well as mobility.

Conclusion

A case of rapid onset paraplegia with spinal shock at presentation due to acute transverse myelitis, which is known to have a poor prognosis leaving permanent disability, recovered absolutely with a unique therapy combining Physiotherapy, Ayurvedic Panchakarma & Acupuncture Therapy together. Physiotherapy regaining movement and physical strength, Panchkarma balancing 'doshas' and detoxifying body, along with Acupuncture therapy achieving equilibrium of 'Yin' and 'Yang' and regulating energy flow in the body, when combined and practiced simultaneously could achieve promising results in a case of paraplegia with spinal shock due to acute transverse myelitis.

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