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Case Study

AYURVEDIC MANAGEMENT OF CERVICAL MYELOPATHY

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ABSTRACT

Cervical Myelopathy is a condition causing compression of the spinal cord at the cervical level of the spinal cord. It is mostly due to degenerative cervical spondylosis and is hence called Cervical Spondylotic Myelopathy. The spinal cord may directly experience compressive and ischemic dysfunction as a result of age-related spondylotic alterations. A 63-year-old male with complaints of gradually progressive weakness in the arms and hands along with numbness, tingling sensation, neck stiffness and pain around the neck region for the last 10 years came to the OPD of our hospital. The management offered by contemporary medicine is not satisfactory. Cervical myelopathy and *Greevastambha* can be co-related in this case, based on signs and symptoms. This case report demonstrates how the clinical and radiological symptoms of cervical spondylotic myelopathy were alleviated by an Ayurvedic intervention. To confirm these results and incorporate Ayurveda into conventional medicine for spinal cord injuries, more investigation and controlled trials are necessary.

INTRODUCTION

Degenerative disorder of the spine that causes mechanical compression of the spinal cord is called degenerative cervical myelopathy (DCM), formerly known as cervical spondylotic myelopathy (CSM). Even though this condition is common, little is known about the pathophysiology underlying mechanical stress-induced damage. DCM can result from both dynamic and static pressures. The former is associated with intervertebral disc bulge, stenosis of the developmental canal, and hypertrophy of the ligamentum flavum whereas, ligamentum flavum invagination is one example of a dynamic stressor. Based on the histopathological investigation of DCM, it appears that the disease is primarily limited to the white matter tracts. In the lateral corticospinal tract, there is evidence of Wallerian degeneration of motor axons, which can cause clinical symptoms such spastic gait. Patients with symptoms of impaired feeling, abnormalities in proprioception, or disruption of the sphincter are usually found to have degeneration of the posterior column and central grey matter. Myelin damage, elevated inflammation, and cell death are the fundamental mechanisms of injury.[1] The treatments that can be used to improve prognosis is limited by the incomplete understanding of the precise pathophysiological causes of DCM. Surgery is the main treatment for most DCM patients, and it can stop the disease's progression. Unfortunately, long-term results are poor and many patients relapse[2].

Cervical Spondylotic Myelopathy (CSM) is the most common type of myelopathy in adults over 55 years of age. Here, the condition is characterised by compression of the spinal cord at the cervical level, leading to abnormalities in the gait, pathologic reflexes, hyperreflexia, and spasticity (sustained muscle contractions). The diagnosis of cervical myelopathy is challenging as it may present with a variety of symptoms. In the early stages, symptoms may include local neck pain and stiffness that might mimic the presentation of non-specific mechanical neck pain [3]. Consequently, there is a strong likelihood that, this type of patient may be referred for physiotherapy management. This case report highlights the importance of considering CSM in adults over 55 years of age presenting with NSMNP (Non-specific Mechanical Neck Pain), particularly as the prevalence of both increases with age. It demonstrates the need for health professionals to carry out detailed

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examinations where CSM may be a potential differential diagnosis. It also highlights the importance of Ayurvedic management in CSM.

Case Description

A 63-year-old male patient was consulted in the OPD of the Department of Rasasastra and Bhaishajya Kalpana, Government Ayurveda College Thiruvananthapuram, for the complaint of gradually progressive weakness in the arms and hands. The patient also had complaints of numbness, tingling sensation, neck stiffness and pain around the neck region. The patient had suffered from these problems for the last 10 years. Symptoms were aggravated by his daily routines like buttoning his shirt and holding small objects (professionally he is a teaching faculty, so finds difficulty in holding pen and chalks), restricting the movement of his neck, shoulders, arms and hands. The patient had undergone orthopaedic consultation in a secondary care hospital of Thiruvananthapuram, 2 years before and conservative and surgical management was recommended. He didn't have complaints of bowel or bladder changes or general weakness. The medical history was unremarkable and his general health was good. He was not taking any medications at the time of the consultation.

Examination

On physical examination, the patient was anxious. Appetite was normal, tongue was uncoated. Micturition and bowel movement were normal. The patient had *Vata-Pitta prakrithi* with *Madhyama samhanana* (medium body build), *Madhyama sara* (medium purest body tissue, symmetrical body proportion, *Madhyama satmya* (medium homologation), *Madhyama satwa* (medium mental strength) *Madhyama vyayama sakti* (medium capability of physical activity) *Madhyama ahara sakti* and *Jarana sakti* (medium food intake and digestive fire). The patient demonstrated normal weight; the active movements of the lumbar spine were within functional limits.

On neurological examination, higher mental function and speech were normal. All cranial nerves were normal. On motor examination, bulk, tone, power and coordination of arms and legs were normal bilaterally. Power in both upper limbs were in grade +4. Hyperreflexia was found in the upper extremities bilaterally. Multi-dermatomal decrease of sensation in bilateral upper extremities during pinprick testing was revealed during examination. Lhermitte's sign was positive. Joint position sense and vibration sensation were normal bilaterally. All laboratory and biochemical investigations were normal.

Table 1: MRI Report Before and After the treatment

Before treatment (08/10/2019)	After treatment (08/02/2023)
At C2/3 level: Mild central disc protrusion. Right uncovertebral osteophyte narrowing right neural foramen. No significant nerve root compression.	C2/C3 level: Mild right neural foraminal stenosis.
At C3/4 level: Dise osteophyte complex, causing grade I spinal canal stenosis (AP diameter of spinal canal 8.8mm). Left uncovertebral osteophyte causing significant left neural foraminal stenosis with compression of left C4 nerve root.	C3/C4 level: Left severe and right mild neural foraminal stenosis, indentation on left C4 nerve root.
At C4/5 level: Mild central disc protrusion. No significant spinal canal stenosis. Left uncovertebral osteophyte causing mild left neural foraminal narrowing. No significant nerve root compression.	C4/C5 level: Moderate left neural foraminal stenosis.
At C5/6 level: Disc osteophyte complex indenting on anterior subarachnoid space. No significant spinal canal stenosis. Bilateral uncovertebral osteophytes, narrowing neural foraminae, right > left with compression of right C6 nerve root. Thickened posterior longitudinal ligament noted at C5 and C6 vertebral levels.	C5/C6 level: Right moderate and left mild neural foraminal stenosis. Mild indentation on right C6 nerve root.
At the C6/7 level: Disc osteophyte complex and thickened posterior longitudinal ligament indents on anterior spinal cord surface. Ill-defined mild patchy T2 hyperintensities are seen in anterior aspect of the cord at C6 vertebral level	C6/C7 level: Right mild and left moderate neural foraminal stenosis. Mild indentation on left C7 nerve root. The central canal AP dimensions are 15.6 mm,

and C6/7 intervertebral disc level suggestive of mild Myelomalacic changes. No spinal cord thinning. AP diameter of spinal canal 8.8 mm. Bilateral uncovertebral hypertrophy seen, left > right with significant left neural foraminal stenosis and compression of left C7 nerve root.	11.3 mm, 8.1 mm, 10 mm, 10.7 mm, 9.5 mm, 14.4 mm at C1/C2 to C7/T1 levels respectively. Spinal cord is normal in size and signal intensity. No myelopathy features seen in the present study. Pre and paraspinal soft tissues appear normal in T2Wl images.

Table 2: Intervention (*Samana* therapy)

Day	Intervention
4/10/2019	1. *Rasnasapthakam Kashaya* (15ml *kashaya* with 45ml lukewarm water, at 7 am) 2. *Balaguluchyadi Kashaya* (15ml *kashaya* with 45ml lukewarm water, at 7 pm) 3. *Nimbamrutherandam* (15 drops with both *Kashaya*) 4. *Yogaraja guggulu* (1-0-1 with *Kashaya*) 5. *Dhanyamlam* 6. *Jadamayadi churna* (external application with *Dhanyamlam*)
4/11/2019	1. *Rasnasapthakam Kashaya* (7 am) 2. *Dasamoolam Kashaya* (7pm) 3. *Sahacharadi (21) avarthi* (15 drops twice daily with *Kashaya*) 4. *Yogaraja guggulu* (1-0-1 with *Kashaya*)
7/12/2019	1. *Dasamoolam Kashaya* (twice daily) 2. *Rasnadasamooladi ghritha* (5ml twice daily with *Kashaya*)
4/01/2020	1. *Rasanadasamooladi ghritha* (10ml twice daily on empty stomach with lukewarm water) 2. *Dasamoolahareethaki lehyam* (10gm at night before bed) 3. *Sahacharadi (21) Avarthi* (0-1-1-0, 11 am & 3 pm)
5/2/2020	1. *Dhanwantharam (101) Avarthi* (2-0-0, 7 am) 2. *Sahacharadi (21) Avarthi* (0-0-2, 7 pm)
26/02/2020	1. *Ksheerabala (101) Avarthi* capsule (2-0-0, 7am, before food) 2. *Sahacharadi (21) Avarthi* capsule (0-0-2, 7pm, after food)
20/05/2020	1. *Dhanwantharam (101) Avarthi* (2-0-0, 7 am) 2. *Sahacharadi (21) Avarthi* (0-0-2, 7 pm)
03/08/2020	1. *Kalyanaka gritham* capsule (1-0-1, before food) 2. *Dhanwantharam (101) Avarthi* (0-1-1-0, 11 am and 3 pm)

DISCUSSION

Three key pathophysiological patterns- static mechanical compression, dynamic mechanical compression, and spinal cord ischemia- are involved in the development of cervical spondylotic myelopathy [4]. Spinal cord compression and reduction in diameter occur as a result of static mechanical factors. The intervertebral disc dries out with age, causing a loss of disc height and increased strain on the vertebral articular cartilage and end plates. The development of osteophytic spurs at the border of these end plates stabilizes neighboring vertebrae whose disc degradation is the source of their hypermobility. The vertebrae are additionally stabilized by the calcified disc. Moreover, the ligamentum flavum may tense up and buckle against the dorsal spinal cord. These result in myelopathy by directly compressing the spinal cord. The spinal cord injury caused by this direct mechanical and static mechanical compression may worsen with normal cervical spine mobility. During flexion, the spinal cord lengthens and spans the ventral

osteophytic ridges. During extension, the ligamentum flavum may buckle into the spinal cord, reducing the amount of space available for the spinal cord [5].

As one among the *Nanatmaja vatavyadhi* (neurological, rheumatic, and musculoskeletal disease), *Greevastambha*, an Ayurvedic diagnostic for this condition, can be connected with it. The aggravated *Guna* of *Kapha dosa* resulting from *Kaphakara nidanas* like *Guru*, *Snigdha*, and *Sheeta* causes *Skannathwam*, which is connected to the ossification of the posterolateral ligament. Later, *Marga avarodha* (obstruction in the normal course of *Vata)* vitiates the *Vata*, causing *Dhathu kshaya* (depletion of bodily tissues) and setting off a vicious cycle that ultimately results in the appearance of CSM[6]. There is cervical and lumbar facet arthropathy and ischemia, which could be brought on by a reduction in blood flow to the area that marks *Raktha kshaya*. *Rakthavritha vata*, also known as *Supthathwa*, is seen as a stage that comes before *Mamsavritha vata[6]*. This patient possesses the three essential characteristics of *Rakthavritha vata*: *Supthi*, *Sopha*, and *Ruja*. The patient was treated according to the following principles: *Srtotosodhaka* (bio-purification of microchannels), *Vata anulomaka* (correction of the functions of *Vata dosha*), *Brmhana* (nourishing therapy), and any *Avarana* or *Marga avarodha* of this kind should not receive treatment that is compatible with the *Kapha* and *Pitta doshas*. In addition, *Rasayana*, *Guggulu*, and *Sneha* preparations are recommended for *Nanatmaja vata*, *Avrutha vata*, and *Chirakala* (chronic) *Vata vyadhi.*

Tiktha rasa is recommended for *Asthivyadhi,* according to Ayurveda [7]. For *Vata* disorders such as *Majjagata vata*, *Asthigata vata*, *Khanjathwa*, and *Snayugata vata*, *Yogaraja guggulu* is beneficial. It boosts both *Bala* (strength) and *Agni* (digestive force) [8]. Its *Amadoshghna* qualities make the formulation (*Yogaraja guggulu*) superior among others. It disentangles the *Sanjitha ama*, controls the *Pachaka agni*, and prevents the creation of new *Ama*. *Tridoshghna, Vedanasthapana*, and *Sothahara* are the three main properties of *Dasamoola Kashaya* [9]. It helps in the recovery from all the *Vataja* and the respiratory ailments. The laxative properties of *Rasnaspathakam Kashaya* and *Nimbhamritha Eranda Taila* are advantageous in *Samavata*, *Amadosha*, *Vibhandha*, and *Sandhigata vata*. Specifically, *Vata vyadhi*, *Pakshavatha*, *Shula*, and *Vibhandha* are among the cases where *Eranda paka* are indicated. When it comes to *Amayuktha Rakhtanuga vata*, which is connected to pain and inflammation, *Balaguluchyadi kashaya* works well [10]. An excellent Ayurvedic *Thaila* preparation (*Sneha kalpana*) for almost all *Vatavyadhi* (rheumatic disorders, particularly affecting the lower limbs and lumbago) is *Sahacharadi 21 avarthi*. Internal administration of *Rasasamoola ghritha* is recommended for *Vata roga*, *Shirakampa*, *Sarvanga-ekanga roga*, and *Vata* diseases that are usually localised in *Urdwakaya*. *Dasamoolahareethaki Lehya* is particularly beneficial for vitiated *Rakta-pitta*, *Amavata*, *Pravitha sopha* (inflammatory disorders), and other *Vata doshas*. *Dasamoola hareethaki Lehya's* property helps with *Shesha ama doshaharana*, *Srothosodhana,* and *Brmhana* all at once[11].

Numerous non-surgical techniques, including physical therapy, cervical immobilization, and traction, have been employed in the management of CSM. While previous research indicates that immobilization did not enhance the patient's condition. Surgical intervention is required in the cases of myelopathy. Not every patient is a candidate for a cervical laminectomy. It has been linked to the development of latent spinal instability and kyphotic spinal abnormalities, which may cause neurologic degradation. Following our treatment, SGOT, SGPT, and serum creatinine were all found to be within normal ranges. This illustrates the multi-ingredient herbo-mineral compositions' safety profile. Therefore, this case study is significant because it demonstrated that Ayurvedic medicine can alleviate cervical compressive myelopathy both clinically and radiologically. In this instance, there was no need for surgical intervention.

CONCLUSION

This case report highlights the positive impact of Ayurvedic treatment on cervical myelopathy. Cervical myelopathy and *Greevastambha* were shown to be co-related in this case, based on signs and symptoms. The study illustrates how Ayurvedic intervention relieved the clinical and radiological symptoms of cervical spondylotic myelopathy. Further research and structured studies are warranted to validate these findings and integrate Ayurveda into mainstream healthcare for spinal cord disorders.

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