



CASE STUDY

# A Case Study on Central Cord Syndrome - *Krikatika Marmabhighatajanya Sarvangavata*

Author: Prasanna N Mogasale<sup>1</sup>

Co Authors: Aswathy P M<sup>2</sup> and Nagaraj S<sup>3</sup>

<sup>1-3</sup>Dept Of Roga Nidana and Vikruthi vijnana, Sri Dharmasthala Manjunatheshwara College of Ayurveda, Udupi, KA, India

## ABSTRACT

Central Cord Syndrome is the most frequently encountered form of cervical spinal cord injury which can be found in persons of any age. It is characterized by disproportionately greater motor impairment in upper extremities than lower extremities and variable degree of sensory loss below the level of injury in combination with bladder dysfunction and urinary retention. There is no satisfactory treatment available in western medicine for this condition. As per Ayurveda it can be considered as *Krikatika marmabhighatajanya sarvangavata*. *Krikatika marmabhighata*, is characterised by loss of movement below neck region. Here is a case of 41 year old male patient who had reduced strength and sensation of both lower limbs (left > right) and unable to walk without support was treated with Ayurvedic oral medications and Panchakarma procedures. The case study demonstrates that Central Cord Syndrome may be successfully managed with Ayurvedic treatment.

**Key Words** Central Cord Syndrome, *Krikatika marma abhighatajanya sarvangavata*

Received 13<sup>th</sup> August 21 Accepted 28<sup>th</sup> August 21 Published 10<sup>th</sup> September 2021

## INTRODUCTION

Central cord syndrome, an acute cervical spinal cord injury was initially described by Schneider and colleagues in 1954<sup>1</sup>. CCS is an incomplete cord syndrome that results after a hyperextension injury of cervical spine leading to spinal cord impingement<sup>2</sup>. In CCS there will be disproportionately greater impairment of motor function in the upper extremities than in the lower ones with varying degrees of sensory loss<sup>3</sup>. Pain and temperature sensations, as well as the sensation of light touch and of position sense, may be impaired below the level of injury. Neck pain

and urinary retention are common. Magnetic Resonance Imaging (MRI), Computed Tomography (CT) scanning and production of plain radiographs of the cervical spine can facilitate the diagnosis of Central Cord Syndrome<sup>4</sup>. As per Ayurvedic perspective Central Cord Syndrome can be discussed under *marmabhighata* (injury to vital spot).

*Marma* (vital spot) are vital body areas and are 107 in number. Any injury to *marma* (vital spot) leads to death or serious damage to the body<sup>5</sup>. Central cord syndrome can be taken as *Krikatika marmabhighatajanya sarvangavata*. *Krikatika*



## CASE STUDY

*marma* is present in meeting place of head and neck, it is a *Sandhi marma* i.e., vital spot in joint and a *Vaikalyakaramarma* i.e., disabling vital spot resulting in deformities<sup>6</sup>.

## CASE REPORT

A 41 year old male patient was apparently normal, 8 years back he met with a road traffic accident where the patient fell down from bike hitting head and left side of body. He was immediately taken to hospital and was fully conscious at that time but noticed reduced strength and sensation of both lower limbs and upper limbs (upper limb > lower limbs). On 18/8/2012 MRI scan of cervical spine was done which revealed C5-6 disc prolapse. After 3 days patient started walking with support but still there was reduced strength and sensation in both legs and for 1 week he was hospitalised.

After 2 months he got admitted in an Allopathic hospital and underwent C5-6 microdiscectomy with plate and screw fixation and iliac bone graft on 22/10/12. After the surgery he developed reduced strength and sensation from chest region to both lower limbs and upper limbs. He was unable to walk and was confined to bed, and he also noticed reduced bowel and bladder control. He was managed with oral medications and physiotherapy for about 2 months after which he was discharged. Regular follow ups in the interval of 3 months was done for the next 1 year. For the next 4 years, the patient remained away from direct medical supervision and discontinued all medications but he continued the recommended

physiotherapy. Now he complains of reduced strength and sensation of both lower limbs (left > right) and is unable to walk without support and got admitted in SDM Ayurveda Hospital, Udupi. History of past illness-H/o Chikungunya 16 years back, H/o Trauma -8 years back, known c/o Acid Peptic Disease -7 years, not a known case of Diabetes mellitus and Hypertension, Surgical History-Patient underwent anterior approach C5-6 microdiscectomy with plate and screw fixation and iliac bone graft under GA on 22/10/12.

Clinical examination –

**Higher Mental Functions**– No abnormalities detected,

**Cranial nerves**– No Abnormalities detected.

**Motor system**-Muscle Bulk – there is no significant difference in muscle bulk, Muscle tone- Normotonic b/l hip and knee, hypertonic- at ankle, Muscle Power - Upper limb -Flexors of wrist, Extensors of wrist- 4/5, Extensors of fingers at both meta-carpophalangeal and interphalangeal Joint- 4/5, Muscle Power -Lower limb -Extensors of hip-4/5 (left), Plantar flexors- 4/5( left), Deep tendon reflexes- Biceps- +++(b/l), Triceps- ++(b/l),Knee jerk - ++ (right) and +++ (left), ankle jerk - +++ (right) and ++++ (left), Superficial reflexes- Babinski's sign- extensor plantar response, Involuntary movements – Absent, Gait - Patient walks with support

**Sensory System**- Touch - sensation less in left lower limb, Point discrimination – present, Two point discrimination – present, Pain – present, Pressure – present, Temperature – present, Joint



## CASE STUDY

position – present, Vibration – present, Stereognosis – present.

**Investigations - MRI SCAN - CERVICAL SPINE** - Cervical spine stenosis due to C5-C6 disc prolapse causing spinal cord compression and edema.

**Treatment protocol** 1. Shamanaoushadas  
2. Panchakarma therapies

### 1. Shamanaoushadas (Table 1)

1) *Lashuna Rasayana* Course (SDM PHARMACY)

2) *Brihatvatachintamani* with Gold 0-1-0 (SWADESHI PHARMACY)

3) *Avipathikarachoorna*- 0-0- 5 gms with luke warm water (SDM PHARMACY)

### 2. Panchakarma therapies

1) *Greevabasthi* with *Prasaranyadithaila*

2) *Matrabasthi* with *Tikthaka Ghritha* (SDM PHARMACY)

3) *Abhyanga* with *Ksheerabala thaila* (SDM PHARMACY) followed by *Nadi Sweda* from nape of neck to both upper limbs and from low back to both lower limbs were done.

**Table 1** Ingredients of *Shamanaoushadas*

Yoga		
<b>Lashuna Rasayana Cap</b>	<i>Lashuna</i>	<i>Vatavyadhi</i> , all types of <i>avarana</i> except <i>pitta</i> and <i>raktha</i> , <i>asthibhagna</i> , <i>asthichyuthi</i> , <i>asthigatavata</i> ,
<b><i>Brihatvatachintamani</i> with Gold 1</b>	<i>Swarna bhasma</i> , <i>rajatabhasma</i> , <i>abhrakabhasma</i> , <i>lohabhasma</i> , <i>pravalabhasma</i> , <i>mukthabhasma</i> , <i>sutabhasma</i> , juice extract of <i>kumari</i> .	<i>Vatapittajavikaras</i> , <i>sandhivata</i> , <i>amavata</i> , <i>pakshaghata</i> , <i>vatavikara</i> , <i>apatanat raka</i> ,
<b><i>Avipathikarachoorna</i></b>	<i>Trkatu</i> , <i>triphala</i> , <i>vidalavana</i> , <i>vidanga</i> , <i>ela</i> , <i>patra</i> , <i>lavanga</i> , <i>trivrit</i> , <i>sharkara</i> .	<i>Amlapitta</i> , <i>malamutravibhanda</i> , <i>vimshatiprameha</i> , <i>agnimandhya</i> .
<b><i>Prasaranyadithaila</i></b>	<i>Prasarani</i> , <i>thaila</i> , <i>dhadhi</i> , <i>kanjika</i> , <i>ksheera</i> , <i>madhuka</i> , <i>pipplimoola</i> , <i>chitraka</i> , <i>saindhava</i> , <i>vac ha</i> , <i>prasarani</i> , <i>devadaru</i> , <i>rasna</i> , <i>gajapippali</i> , <i>bhallathaka</i> , <i>shatapushpa</i> , <i>mamsi</i> .	<i>Vatakaphajarogas</i> , <i>kubja</i> , <i>pangu</i> , <i>khanja</i> , <i>gridhrasi</i> , <i>ardita</i> , <i>hanustambha</i> , <i>prishtastambha</i> , <i>sirastambha</i> , <i>grivastambha</i> , <i>katistambha</i> ,
<b><i>GuggulutikthakaGhritha</i></b>	<i>Nimbi</i> , <i>patola</i> , <i>vyaghri</i> , <i>guduchi</i> , <i>vasa</i> , <i>ghrita</i> , <i>patha</i> , <i>vidanga</i> , <i>suradaru</i> , <i>gajopakulya</i> , <i>yavakshatra</i> , <i>sarjikshara</i> , <i>nagara</i> , <i>nisha</i> , <i>mishrey</i> , <i>chavya</i> , <i>kushta</i> , <i>tejovati</i> , <i>maricha</i> , <i>vatsaka</i> , <i>deepyaka</i> , <i>agni</i> , <i>rohini</i> , <i>arushkara</i> , <i>vacha</i> , <i>kanamoola</i> , <i>yuktha</i> , <i>manjishtha</i> , <i>ativisha</i> , <i>vishani</i> , <i>yavani</i> , <i>shuddhaguggulu</i>	<i>Sandhi asthimajjagataamaya</i>
<b><i>Ksheerabalathaila</i></b>	<i>Ksheera</i> , <i>bala</i> , <i>tilathaila</i>	<i>Vatarogavinashanam</i>

## OBSERVATIONS AND RESULTS

The patient was admitted in IPD for 15 days for external Panchakarma procedures. He was then advised to take oral medications. Within 7 days of treatment there were remarkable changes in muscle power and sensation. He was advised to continue the oral medications for 1 month.

**Table 2** Clinical findings before and after treatment

Clinical findings	Before treatment	After treatment
<b>Muscle power</b>		
<b>Upper limb –</b>		
<b>Flexors of wrist</b>	4/5	5/5
<b>Extensors of wrist</b>	4/5	5/5
<b>Extensors of fingers</b>	4/5	5/5
<b>Meta-carpophalangeal Joint</b>	4/5	5/5
<b>Interphalangeal Joint</b>	4/5	4/5



## CASE STUDY

Lower limb – Extensors of hip (left)	4/5	5/5
Plantar flexors (left)	4/5	5/5

## DISCUSSION

*Agantujavyadhi* (diseases caused due to external factors) begins with pain and then it brings about disturbance in the equilibrium of *doshas* (regulatory functional factors of the body)<sup>7</sup>. And there will be no *dosha sanchaya* (accumulation of dosha), *prakopa* (provocative stage) and *prasara* (migration stage) stages and it is inappropriate to mention the *udbhavasthana* (site of formation) of *dosha* (regulatory functional factors of the body). *Abhigata* (injury) to *Krikatika marma* leads to *vata prakopa* (provocation of one of the regulatory functional factor of the body) which in turn cause *shoshana* (drying) of *sira* (any tubular vessel of the body) and *snayu* (include connective tissue elements such as ligaments, tendons, nerves etc.) leading to *balahani* (loss of physical strength) in both upper and lower limbs. *Krikatika marma* is a *sandhi marma* (vital points in which main structural component is joint) and Acharya Vagbhata mentioned that *abhigata* (injury) to *sandhi marma* (vital points in which main structural component is joint) leads to *balakshaya* and *cheshta kshaya* (loss of strength and movement)<sup>8</sup>. *Krikatikamarma* is a *Vaikalyakaramarma* (vital point which results in deformities) means it will leads to deformities<sup>9</sup>. Acharya Sushruta mentioned that *Krikatika marmabhigata* results in *Chalamoorthatha*<sup>10</sup>. From this we can infer that any injury to *krikatika*

*marma* will leads to loss of movement below neck region.

Diseases of *Vata* may manifest out of *Margavarana* and *Dhatukshaya*. The management of *Shuddha vatavyadhi* includes *snehana*, *swedana*, *brimhana* and *rasayana* can be given by considering the associated *dosha*.

*Lashuna rasayana* course is started with 6 capsules and with addition of 6 capsules after every fourth/4<sup>th</sup> day ending with 24 capsules. Anupana for *Lashuna rasayana* selected is milk and is administered in empty stomach at morning. As per Ashtanga hridaya, there is no drug better than *lashuna* for treatment of all kinds of *shuddhavata*<sup>11</sup>. *Lashuna* is having *vata* and *kaphahara* property and it also nourishes the tissues. It also contains vitamins like niacin, thiamine, folic acid etc which helps in improving the muscle strength. After finishing the *Lashuna rasayana*, *Anulomana* (purgation) was administered for a day with *Trivriith lehya* in a dose of 30 grams.

The patient is a k/c/o Acid Peptic Disease, so *Avipathikara choorna* was continued as it will helps in *pitta rechana* (purgation).

*Brihatvatachintamani* with gold was given internally which is a *brimhana* yoga and is effective in *vatavikara*.

*Greevabasti* is a procedure which is having both properties of *snehana* (*oleation therapy*) and *swedana* (*fomentation therapy*). This procedure helps to improve the circulation around neck region and it also strengthens the neck, shoulders and arms. This local oleation and fomentation is



## CASE STUDY

very effective as it gives remarkable results as they act at the site of pathogenesis. *Prasaranyadi thaila* is used for *Greevabasti* as it is useful in curing all the diseases of *Vata*. This *thaila* contains drug *Prasarini* which contains phytochemicals like sitosterol, stigmasterol, iridoid, glycosides, alkaloids, carbohydrates, proteins and amino acids which are having anti inflammatory, analgesic and stimulatory actions.

*Matrabasthi* (enema using medicated oil) is done with *Tikthaka ghritha* which will act in deeper *dhatu*s like *asthi* and improves the *bala* (strength)<sup>12</sup>. After the treatment it is observed to have improvement in neurological deficits and also there was improvement in bowel and bladder control.

sensory functions. And in this case the patient had noticed improvement in power and sensation.

## CONCLUSION

The above case study demonstrates the successful management of case of Central cord syndrome by Ayurvedic medications where there are no satisfactory treatments are available in current era of medicine. While the scope for further research is enormous, and with proper examination and selection of treatment protocols *Ayurveda* can be beneficial in the treatment. *Lashuna Rasayana*, *Greevabasthi*, *MatraBasthi* (enema using medicated oil) and *Abhyanga* (oil massage) were carried out by selecting appropriate drugs and ultimately all these treatment were given to pacify the *vata dosha* (one among the regulatory functional factors of the body) and to increase the strength and also for restoring the motor as well as



## CASE STUDY

## BIBLIOGRAPHY

1. Massaro F, Lanotte M, Faccani G. (1993) Acute traumatic central cord syndrome. Acta Neurol (Napoli), 1993 Apr.15;(2):97-105.
2. Schneider RC, Cherry G, Pantek H. (1954) The Syndrome of acute central cervical spinal cord injury with special reference to the mechanisms involved in hyperextension injuries of cervical spine. J Neurosurg, 1954 Nov.11;(6) : 546 -77.
3. Nowak DD, LeeJK, Gelb DE, et al. (2009). Central Cord Syndrome. J Am AcadOrthop Surg; 2009 Dec.17 (12):756-65.
4. Molliqaj G, Payer M, Schaller K, Tessitore E. (2014 Feb- Apr60 (1-2) Acute traumatic central cord syndrome: a comprehensive review. Neurochirurgie.. 5-11.
5. Acharya Sushrutha, (2017) Sushrutha Samhita, Vaidya Jadavji Trikamji Acharya and Narayan Ram Acharya Kavyatirtha editors. Chaukhambha Sanskrit Sansthan, Varanasi Sharira Sthana; 6/3, 369.
6. Acharya Sushrutha, (2017) Sushrutha Samhita, Vaidya Jadavji Trikamji Acharya and Narayan Ram Acharya Kavyatirtha editors. Chaukhambha Sanskrit Sansthan, Varanasi Sharira Sthana; 6/12, 370.
7. Acharya Charaka (2017) Charaka samhita, Acharya Jadavaji Trikamaji editor. Choukabha publication ; Varanasi, Sutra sthana; 20/7, 113.
8. Acharya Vagbhata, (2012) Ashtangahrdayam, Pt. Hari Sadashiva Shastri Paradakara, editor. Chaukhambha Sanskrit Sansthan; Varanasi: Nidana Sthana, 4/50,415.
9. Acharya Sushrutha,(2017) Sushrutha Samhita, Vaidya Jadavji Trikamji Acharya and Narayan Ram Acharya Kavyatirtha, Chaukhambha Sanskrit Sansthan; Varanasi: Sharira Sthana; 6/22, 372.
10. Acharya Sushrutha, (2017) Sushrutha Samhita, Vaidya Jadavji Trikamji Acharya and Narayan Ram Acharya Kavyatirtha, editors. Chaukhambha Sanskrit Sansthan; Varanasi: Sharira Sthana; 6/27, 374.
11. Acharya Vagbhata,(2012) Ashtangahrdayam, Pt. Hari Sadashiva Shastri Paradakara, Chaukhambha Sanskrit Sansthan; Varanasi: Uttara Sthana, 39/127 , 932.
12. Acharya Charaka,(2017) Charaka Samhita, Acharya Jadavaji Trikamaji, editor. Choukabha publication; Varanasi: Sutra sthana; 28/27 180.