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A CASE STUDY ON THE AYURVEDIC MANAGEMENT OF ANTERIOR SPINAL ARTERY THROMBOSIS

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ABSTRACT

Spinal cord infarction is a well-described, but rare, etiology of myelopathy. The most common syndrome, anterior spinal artery syndrome (ASAS), is caused by interruption of blood flow to the anterior spinal artery, producing ischemia in the anterior two-thirds of the cord, with resulting neurologic deficits. Causes of ASAS include aortic disease, thoracolumbar surgery, sepsis, hypotension, and thromboembolic disorders.

KEYWORDS: ASAS, Sarvangavata.

INTRODUCTION

Anterior spinal artery thrombosis is a medical condition characterized by the formation of a blood clot within the anterior spinal artery, which supplies blood to the anterior portion of the spinal cord.[1] If the blood flow through the anterior spinal artery becomes occluded, the anterior two-thirds of the spinal cord will suffer an infarct, resulting in bilateral lower extremity paresis or paraplegia with loss of pain and temperature sensation. This clinical manifestation is known as anterior spinal artery syndrome (ASAS). The ASAS is a rare cause of spinal cord acute ischemic myelopathy but is the most common cause of spinal cord infarcts.[1,2,3] ASAS is caused by any etiology that decreases or affects blood flow to the anterior spinal artery, most commonly, aortic surgery and atherosclerotic disease.[2] Prognosis is generally poor, as there is no acute management available for ASAS. Management consists of identifying the underlying etiology, treatment of symptoms, and prevention of complications.[2]

As per Ayurvedic classics this condition being a Vata predominant, could be taken as Sarvangagatavata. Sarvangagatavata is the condition of Vata predominance that affects all over the body and associated with stiffness and difficulty in joint movements.[4] including contractures. Vatavyadhi treatment like Snehana, Swedana, Mridushodana and Brimhana[5] and other Vataharashamanoushadhis could bring about relief to the condition.

MATERIALS AND METHODS

This study is a case report on the prospective study of Ayurveda treatment administered to a 23-year-old female patient (Ip no:177296) diagnosed with Anterior spinal artery thrombosis who visited the Department of Kayachikitsa, Sri Dharmasthala Manjunatheshwara Ayurveda Hospital, Udupi.

CASE REPORT

CHIEF COMPLAINTS

Patient complaints of weakness, disability to walk and loss of sensation in bilateral lower limb & reduced strength in the upper limb for 3 years.

HISTORY OF ILLNESS

A female patient aged around 23 years, was apparently normal 3 years back, suddenly in one fine morning patient felt pain in the nape, which she ignored and continues to do house hold work for another half an hour, later the pain got aggravated and the patient feels like reduced strength in the upper limb. That time, she decided to consult a local physician and suddenly she developed reduced strength and loss of sensation in the lower limb. She was suddenly taken to the hospital and on the way, she developed severe breathing difficulty and she was admitted in ICU directly. On the very next day due to the progression of the symptom's patient was connected to ventilator. She was under observation for 3 months and later was shifted to the ward. By that time patient was able to regain the strength of her upper limb, but the condition of her lower limb remains the same. Later she got discharged and was referred to higher speciality hospital due to the complication of tracheostomy. Patient also underwent plastic surgery for her bedsores. After all these treatment patients consulted a local physician for symptomatic management. Currently the patient has complete loss of strength in the lower limb, reduced strength in the upper limb, loss of pain sensation in the lower limbs and fingers. Patient came to our hospital for further management.

HISTORY OF PAST ILLNESS

H/O hypotension and hypoglycaemia.

No history of bowel and bladder incontinence, breathing difficulty, headache, trauma, seizures or loss of consciousness No delay in the milestones.

FAMILY HISTORY

Both parents are alive and healthy.

Single child

No H/O Ischemia in family members

Non consanguineous marriage

PAST MEDICAL HISTORY

H/O of ICU care followed by ventilation, hence h/o tracheostomy

Plastic surgery for bedsore management.

EXAMINATIONS

Table 1:

GENERAL EXAMINATION	**VITAL SIGNS**
Pallor- absent	Bp- 120/90mmhg
Icterus- absent	Pulse: 70/min, regular
Clubbing- absent	Temp:98.6 F
Cyanosis- absent	Height: 162 cm
Lymph Node- not palpable	Weight: 60kg
DASHAVIDHA PAREEKSHA	
Nadi: Vatapita	Jihwa: Alipta
Mala: Abadda	Mutra: Anavilam
Druk: Prakrutha	Akruthi:
Shabda: Prakrutha	Sparsha: Anushna
Ahara Shakti: Madhyama	Vyayama Shakti: Avara

Systemic Examination

Central nervous system examination

Higher Mental Function

Appearance- calm, cooperative

Behavior- pleasant, attentive

Level of consciousness- conscious

Delusion, Amnesia, Hallucination, Illusion, Dementia- absent

Sleep- sound

Emotions- normal

Orientation of place and time- present

Memory-normal

Intelligence- reduced

Speech- normal

Dysphonia- absent

Dysgraphia- not able to assess

Echolalia- absent

Gait- abnormal, walker assisted with support

Ptosis - absent

Nystagmus - absent

CRANIAL NERVES- On examining all cranial nerves were found to be intact.

Co-ordination of movements

Finger nose test- not possible

Heel knee test- not possible

Lateral and posterior column sensations- normal

Cerebellar signs- absent

Motor System

MUSCLE BULK- symmetrical in bilateral upper limb and lower limb

MUSCLE ATTITUDE- normal

MUSCLE TONE- hypotonic in upper limb, hypertonic in lower limb

ABNORMAL MOVEMENTS- absent

Sensory System

Pain- reduced over bilateral lower limb, upper back, lower back and fingers in the upper limb

Touch- intact

Pressure- intact

Temperature- diminished over bilateral lower limb and back

Table 2: Specific examination.

Muscle Power

Muscle power	**Left u/l**	**Right u/l**
Upper arm (Elbow)	2/5	3/5
Lower arm (Wrist)	2/5	2/5
Grip	0/5	0/5

	Left LL	**Right LL**
Hip	Adduction – 0/5	Adduction – 0/5
	Abduction – 0/5	Abduction – 0/5
	Flexion – 0/5	Flexion – 0/5
	Extension – 0/5	Extension – 0/5
Knee	Flexion – 0/5	Flexion – 0/5
Extension – 0/5		Extension – 0/5
Ankle	Plantar flexion- 0/5	Plantar flexion- 0/5
Dorsiflexion -0/5		Dorsiflexion -0/5
Deep reflexes	**Left U/L**	**Right U/L**
Biceps	3+	3+
Triceps	3+	3+
Supinator	3+	3+
Left L/L		**Right L/L**
Kneejerk	3+	3+
Ankle jerk	3+	3+

Gradation for muscle power

0- No muscular contraction

1- Flicker or trace of contraction

2- Active movement with gravity eliminated

3- Active movement against gravity

4- Active movement against gravity and some resistance

5- Active movement against full resistance

Gradation for reflexes

0- No response, 1+ - Diminished, low normal. 2+ - Average (normal), 3+ - Brisker than average, 4+ -Very brisk, hyperactive, with clonus.

Investigations

MRI BRAIN- Normal study

MRI WHOLE SPINE- Anterior spinal artery thrombosis

BMD OF SPINE: T SCORE -2.2 (OSTEOPENIA)

BMD OF LEFT FEMURE- T SCORE -1.7 (OSTEOPENIA)

Treatment

The internal medicines selected were of Vatasamana and Brimhana properties (Table 4). The external treatments done were also Vatahara treatments aimed to give better stability (Table 3).

Table 3: Procedures Done Externally with Duration.

Sl. No	Procedure	Duration
1	Shirodhara with Ksheerabala Thaila	7 Days (28/8/23-6/09/23)
2	Shashtika Shali Pinda Sweda Followed by Veshtana with Ksheerabala Taila after Abhyanga with Ksheera Bala Taila	15 Days (28/8/23-16/09/23)
3	Rajayapana Basthi and Matra Basthi with Dhanwantara taila (On alternative days)	7 Days (01/8/23-10/09/23)

During the period of stay in the hospital, Physiotherapy was done. Physiotherapy is often an exercise program adapted to the needs of each individual.[7] The active involvement of the patient enables the achievement of a better range of movements of the joints.

Table 4: Medicines Given Internally with Dose.

Sl. No	Medicine	Dose
1	Cap. Ksheerabala 101	1 TID
2	Cap. Balamoola	2 TID
3	Punarnavasava	3 tsp TID
5	Saraswatharishta	15ml TID

ter 20 days of treatment patient started feeling better. She found mild increased strength in B/L Upper limb and B/L Lower limbs.

By giving gap of 4 months, again started the treatment for 15 days (14/12/23- 30/12/23) with

1. Sarvanga abhyanga with Ksheerabala taila f/b Shashtika Shali Pinda Sweda.
2. Veshtana with Sahacharadi taila
3. Pizhichil with Mahanarayana taila + tila taila
4. Matrabasti with Ksheerabala taila (60 ml)
5. Dhanadanayanadi Kashaya 15ml TID
6. BVC Gold 0-1-0
7. Physiotherapy

RESULTS

OBSERVATION on 30/12/23 After 35 days of treatment patient found increased strength in B/L Upper limb and B/L Lower limbs with increased movements and sensation in B/L Upper limb and B/L Lower limbs.

Table 4: Grading of Muscle Strength Using the Medical Research Council Manual Muscle Testing Scale.

Body part		Before treatment	After treatment
Upper Limb	Right	3	4
Left		4	5
Lower Limb	Right	3	4
Left		4	5

Table 5: Deep Tendon Reflex.

Assessment Reflex	Before treatment		After treatment	
	Right	**Left**	**Right**	**Left**
Biceps	3+	3+	3+	2+
Triceps	3+	3+	3+	2+
Knee jerk	4+	4+	3+	3+
Ankle jerk	4+	4+	4+	4+

- Muscle strength was evaluated using the Medical Research Council Manual Muscle Testing Scale which is the most accepted method of evaluating muscle strength.[8] In this method, the key muscles from the upper and lower extremities are tested against the examiner's resistance and the patient's strength is graded on a scale of 0 to 5, with grade 0 indicating no muscle strength and grade 5 indicating full power.[9] Here, after treatment, the muscle power showed improvement in both limbs. Before treatment, the right limb had decreased power against resistance which improved after the treatment. The left limb also gained power after treatment (Table 4). Grip also showed marked differences.

- Deep Tendon Reflexes are important parameters of neurological examinations used to assess the degree of facilitation of spinal cord centers.[10] It is graded from 0 to 4+. Grade 0 indicates hyporeflexia which is an absent or diminished response. Grade 2+ indicates a normal reflex in all except the knee where grade 3+ is normal. Hyperreflexia indicated by grades 3+ (except in knee) and grade 4+ refers to hyperactive or clonic reflexes[14] The deep tendon reflexes were exaggerated in both the limbs before treatment. Also, both the ankles showed clonus. After treatment, the left limb showed normal reflexes except the ankle which still had clonus, but with reduced oscillations. (Table 5)

DISCUSSION

Probable mode of action of drugs

The condition of Anterial spinal artery thrombosis requires both internal and external interventions. The treatment protocol followed was based on Vatavyadhi treatment principle

like swedana, shodhana and brahmana therapies. Because of uttariothara dhatu and prabhala vayu involvement, cap balamoola and ksheerabala were selected along with Dhanadanayanadi Kashaya. Saraswatharishta were choosen due to the action of medicine on higher mental function. External procedures were started with a Shirodhara gives strength to the Prana and Indriyas, & reestablishes the functional integrity between Dosha's through its mechanical effect.[11] The medicine used here is tilataila, which is having vatahara property. This was f/b Snehana Swedana procedures whicha are pre-requistics of any process of shodhana. Also Sneha swedana procedures relieves the stiffness of joints. Ksheerabala taila alleviates the shakasrita vata conditions was used in bahya snehana. Swedana was achieved by procedures like shastika shali pinda sweda having both tridosha and brimhana guna. Rajayapana basthi is selected because of its beneficial sadhyo balajanana and rasayana effects.

CONCLUSION

The analysis of Anterior spinal artery thrombosis in terms of Ayurveda concludes that Anterior spinal artery thrombosis is a symptom complex where we can't correlate particular Ayurvedic term, but based on the symptoms here we have taken as *Sarvangavata.* The management here has been done exclusively using Ayurveda medicines, appropriate Panchakarma procedures and supportive therapies. Remarkable improvements in the quality of life of the patient was seen. After treatment, the muscle power showed improvement in both limbs. Grip also showed marked differences. The left limb showed normal reflexes except the ankle which still had clonus, but with reduced oscillations.

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Conflicts of interest

There are no conflicts of interest.

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