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AYURVEDIC MANAGEMENT IN SPASTIC CEREBRAL PALSY: A CASE STUDY

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ABSTRACT

Cerebral Palsy is a neuromotor disorder affecting movement and posture causing activity limitation. Although non progressive, Cerebral Palsy(CP) is one of the major cause of childhood disability. Nearly 15-20% of physically disabled children in India is affected by CP. Estimated incidence of CP in India is 3 per 1000 live birth. Spastic CP is the most common form and make up over 70% of all diagnosis.20-30% of Children with CP have spastic hemiplegic CP. Spastic CP can be included under the spectrum of *Vathavyadhi*, in which mobility(*Chalathwa*),of the area is affected along with presence of contractures (*Sankocha*) and spasticity(*Sthambha*).Cerebral Palsy is not a completely curable disease but the burden of disease on the patient can be reduced by timely and effective Ayurvedic interventions. The present case is of a 6-year-old male child with Spastic Hemiplegic CP presenting with symptoms like reduced range of movement and muscle power of left upper and lower limb and gait abnormality with preserved intellect who has undergone Oleation (*Snehana*) Sudation(*Swedana*) and Medicated Enema (*Vasthi*) along with external application of medicines (*Upanaha*).The spasticity was assessed through Range of motion(ROM) of affected joints using Goniometer and Modified Ashworth Scale. After treatment spasticity was reduced and ROM considerably increased in shoulder,wrist,knee and ankle joints.Musclepower was also increased after the treatment.

Keywords: Cerebral Palsy,Spasticity,Hemiplegia

INTRODUCTION

Cerebral Palsy describes a group of permanent disorders of the development of movement and posture causing activity limitation due to non- progressive disturbances in the developing brain.Although CP is described as a static encephalopathy, the neurological features may change over time.[1] CP is generally divided into several major motor syndromes that differ according to the pattern of neurological involvement, neuropathology and aetiology.[2]

Spastic hemiplegia may be due to in utero or neonatal stroke. Children with spastic hemiplegia have decreased spontaneous movements on affected side. The arm is often more involved than leg and difficulty in hand manipulation is obvious by one year of age. Early hand preference may also be present. Spasticity is apparent in affected extremities, particularly ankle forming an equinovarus deformity of foot. Circumductive gait is apparent.[2]Management of CP requires multidisciplinary approach. Physiotherapy, occupational therapy, orthopaedic surgical procedures and use of orthotics constitute the major line of management.[3]If proper movement is not given, contractures develop in the limbs.[4]Botulinum toxin is a widely used medical intervention in children with spasticity. [3]Although Botulinum toxin is well tolerated with few side effects, it can have spread to nearby muscles or tissues and may cause unintended weakness of nearby musculature.[5]The spasticity reduction obtained is short lived.[6]So, the treatment is not permanent and requires repeated administration. The brain retains an innovative ability to reorganise its function in response to an injury.[7]Ayurveda brings CP under the spectrum of *Vathavyadhi*. Spastic Hemiplegic CP may be considered as *Pakshaghatha*. Ayurvedic treatment modalities for the treatment of *Vathavikaras*including Oleation (*Swedana*),Sudation (*Swedana*) and purificatory therapies(*Shodhana*) along with internal medications can considerably reduce the complications of the disease by enhancing the neuroplasticity of the immature brain.

CASE REPORT

A 6-year-old male child was admitted in the Government Ayurvedic Hospital for Women and Children, Thiruvananthapuram with IP No1470 was presented with complaints of weakness of left upper and lower limb and impaired gait. The child with birth weight 3 kg was born through full term normal vaginal delivery and cried soon after birth. Neonatal period was uneventful. All developmental milestones up to eighth month was attained at normal time. Child had a history of fall hitting head at eighth month and developed weakness in left side of body. Child was undergoing physiotherapy since then.

Developmental History

Social smile – 3 months

Neck control – 5 months

Turning over – 7 months

Sit with support – 8 months

Sit without support – one year

Standing with support – 1 ½ year

Walking with support – 2 years

Examination

Higher Mental Functions

- Speech – Receptive – Intact
  Expressive – Clarity reduced
- Gait – Hemiplegic gait

Cranial Nerves – Not affected

Power

- Right upper and lower limb – Grade 5
- Left upper and lower limb – Grade 3

Tone

- Right upper and lower limb – Normal
- Left upper and lower limb – Increased

Bulk

- Upper and lower limb bilaterally symmetrical

Reflex

- Right knee jerk – exaggerated

Investigations

MRI brain reveals resolving subacute haemorrhage involving bilateral basal ganglia.

Pathogenesis(***Samprapthi***)

Head injury (*abhighatha*) leads to vitiation of *Vatha* and *Rakthaw*hich affects blood vessels (*Sira*)as haemorrhagic infarcts which cause obstruction of conduit (*sanga*) which further vitiates *Vatha* affecting fibrous tissues (*Snayu*) of left side of body, thus developing*Pakshaghatha* (Hemiplegia). Vascular occlusion resulting in upper motor neuron type of spasticity is the most likely pathology in hemiplegic CP. [8]

Line of treatment

Internal Medicine – Stimulating digestive factor (*Deepana*), digestion of products of incomplete digestion (*Pachana*), normalising movement of *vathadosha*(*Vathanulomana*).

External – Sudation (*Snehana*), Oleation (*Swedana*), Mild purificatory therapies (*Mridushodhana*)

Internal Medicines

1. Vaishwanarachoorna – 5 gm bd
2. Gandharvaerandam – 1 tsp at bedtime
3. Ashtavargamkashayam – 40ml tds
4. Dhanwantharam 101 Avarti – 5 drops bd

5. Balarishtam – 10ml bd

External Therapies

1. *Choorna Pinda Sweda* with Kolakulathadichoorna
2. *Abhyanga* with dhanwantharamthailam along with *Ooshmasweda* – 7 days
3. *Pathrapotalasweda* – 7 days
4. *Yogavasthi* – Musthadirajayapanavasthi
5. *Shirodhara* with Dhanwantharamthailam
6. *Upanaha* with Kolakulathadichoornam and Dhanyamla, Murivenna and Saindhava – 28 days.

Treatment was done for 45 days. Physiotherapy was done along with the treatment.

Pre and Post Assessment

Modified Ashworth Scale

Pre Assesment	**Post assesment**
Left Upperlimb	Left Upperlimb
• Shoulder flexion – Grade 2 • Elbow flexion – Grade 2 • Elbow extension – Grade 1 • Wrist extension – Grade 2 • Finger extension -Grade 3	• Shoulder flexion – Grade 1 • Elbow flexion – Grade 1 • Elbow extension – Grade 1 • Wrist extension – Grade 1 • Finger extension -Grade 2
Left Lowerlimb	Left Lowerlimb
• Knee extension – Grade 2 • Ankle dorsiflexion – Grade 3 • Knee flexion – Grade 1 • Ankle eversion – Grade 3 • Toe extension – Grade 2	• Knee extension – Grade 1 • Ankle dorsiflexion – Grade 2 • Knee flexion – Grade 0 • Ankle eversion – Grade 1 • Toe extension – Grade 2

Range of Movement

Pre Assesment	Post assesment
Left Upperlimb • Shoulder flexion – 165^0 • Shoulder extension – 40^0 • Abduction - 170^0 • Elbow flexion – 145^0 • Wrist flexion - 75^0 • Wrist extension – 55^0	Left Upperlimb • Shoulder flexion – 165^0 • Shoulder extension – 60^0 • Abduction - 170^0 • Elbow flexion – 145^0 • Wrist flexion – 75^0 • Wrist extension – 65^0
Left Lowerlimb • Hip flexion - 120^0 • Hip extension – 20^0 • Abduction – 40^0 • Knee flexion – 110^0 • Knee extension – 25^0 • Ankle dorsiflexion – 10^0 • Ankle plantar flexion - 35^0	Left Lowerlimb • Hip flexion - 120^0 • Hip extension – 20^0 • Abduction – 40^0 • Knee flexion – 120^0 • Knee extension – 25^0 • Ankle dorsiflexion – 20^0 • Ankle plantar flexion - 40^0

Power

Pre assessment	Post assessment
Left Upper limb – Grade 4 Lower limb – Grade 4	Left Upper limb – Grade 4+ Lower limb – Grade 4+
Right Upper limb – Grade 5 Lower limb – Grade 5	Right Upper limb – Grade 5 Lower limb – Grade 5

DISCUSSION

Functions of *Vata* have close resemblance to the functions of nervous system and the primary *dosha* involved in hemiplegia (*Pakshaghatha*) is *Vata*. So the principal aim of treatment is to normalise *Vata* and associated dosha, if any, and restore the motor and sensory functions and speech. Gut microbiota play a role in the proper functioning of central nervous system.[9] Drugs stimulating digestive factor (*Deepana*) and digesting incomplete products of digestion (*Pachana*) helps in normalising the gut microbiota which can regulate neuroinflammatory response influencing brain recovery.[10]Oleation (*snehana*) and sudation(*swedana*) helps in detatching the accumulated metabolic waste from tissues and liquifying[11] it respectively to bring them to gut(*koshta*) so that it can be easily eliminated from the body. Apart from these subtle actions, oleation and sudation have direct effect on motor functions due to the effect of heat which enhance blood circulation and muscle relaxation which have a positive effect on spastic limbs. Heat increases oxygen uptake and accelerates tissue healing.[12] Ayurvedic treatment principle of hemiplegia (*Pakshaghatha*) involve sudation, oleation and purgation(*virechana*) with appropriate drugs suitable for the doshic status of the patient. As purgation is contraindicated in children [13], mild laxation can be given. Daily use of laxative is proven to show reduction in Sequential Organ failure Assessment Score [14] which assess the performance of organ systems in the body which implies it reduces organ dysfunction. Drugs which enhance neurological function administered through rectal route (*Basthi*) according to the condition of the patient can ensure faster absorption [15] and better neurological action. Enteric nervous system gets stimulated and neurotransmitters carry information to central nervous system. Physiotherapy was provided along with the Ayurvedic treatment as a part of standard intervention to increase muscle strength, range of motion and to prevent joint contractures.

Modified Ashworth scale (MAS) is the most widely used scale to measure spasticity in children [6] and the joint range of motion was measured using a goniometer to standardise the effect of intervention. Post intervention, spasticity was reduced and ROM considerably

increased in shoulder, wrist, knee and ankle joints. Muscle power was also increased after the treatment.

CONCLUSION

Ayurvedic treatment of Spastic hemiplegia comes under the spectrum of *Vatavyadhi* and the improvement in patient's functional status mainly depends on the neuroplasticity. Internal medicine along with external therapies with suitable drugs bring about recovery of brain functions by acting on gut, through active ingredients of drugs which enhance brain function and the thermal effect of procedures. Provision of conventional physiotherapy along, enhance the effect of Ayurvedic treatment.

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