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A REVIEW ON YOGA BASTI IN THE MANAGEMENT OF CEREBRAL PALSY**SATYAWATI RATHIA¹, V. K. KORI², RAJAGOPALA S²., K. S. PATEL³****¹ Ph.D. SCHOLAR, ² ASSISTANT PROFESSOR, ³ PROFESSOR & HEAD,
DEPARTMENT OF KAUMARBHRITYA, I.P.G.T. & R.A. JAMNAGAR, GUJARAT,****INDIA****ABSTRACT:**

Cerebral Palsy (CP) is a motor disorder that results in the loss of muscle control and coordination; caused by damage of the brain during fetal life, birth or infancy. The prevalence of Cerebral Palsy among children is 2 per 1000 live births. This article highlights the efficacy of Yoga Basti in the management of Cerebral Palsy. Research works were carried on Cerebral Palsy in the department of Kaumarbhritya at IPGT&RA, Jamnagar. A simple random sampling method was followed. The data obtained in clinical studies was analyzed by using suitable statistical tests. Yoga Basti was found to be effective on Cerebral Palsy patients. Yoga Basti shown improvement in growth (Height, Weight and Mid Arm Circumference), developmental milestones (sitting, standing, fine motor and personal and social).

Key words: Abhyanga, Cerebral Palsy, Swedana, Udvartana, Yoga Basti.

CORRESPONDENT:**DR. DR. SATYAWATI RATHIA****Ph.D. Scholar,****Department Of Kaumarbhritya****I.P.G.T. & R. A.****Jamnagar,****India****INTRODUCTION**

Cerebral Palsy (CP) describes a group of permanent disorders of the development of movement and posture causing activity limitation. It is also attributed to non-progressive disturbances that occurred in the developing fetal or infant brain resulting motor disturbances of sensation, perception, cognition, communication and behavior, epilepsy and secondary musculoskeletal problems.¹

Risk factors of Cerebral Palsy

Specific risk factors of Cerebral Palsy related to the neurological insult in particular time period i.e. Prenatal, Perinatal and postnatal period² are:-

Prenatal – The prenatal factors are Genetic (Chromosomal anomaly), Congenital (Brain malformation), Maternal factors- Iodine deficiency, Iron deficiency, Poor nutrition, Disease (Hypertension, Fever)- Teratogens (Drugs, Radiation, Alcohol, Smoking), Infections (TORCH, UTI, Chorioamnionitis, intrauterine infections), Poor antenatal care, Abdominal trauma, Multiple pregnancy, Abnormal fetal presentation, Premature separation of placenta and Prolonged labour etc..

Peri-natal- The perinatal factors are Birth Asphyxia, Prematurity, VLBW, Intrauterine growth retardation (IUGR), Intracranial haemorrhage, Cerebral Artery infarction, Peri-Ventricular-leukomalacia (PVL), Sepsis, CNS Infections (Meningitis, Encephalitis), Hypoglycemia and Hyperbilirubinemia etc.

Postnatal- The postnatal factors are Kernicterus, Intraventricular haemorrhage, CNS infections (Meningitis, Tubercular meningitis, Viral encephalitis), Seizures, Hypoxic damage, Hyperpyrexia damage, Head trauma, Symptomatic hypoglycemia, Poisoning and Toxins etc.

Classification of Cerebral Palsy

Cerebral Palsy is broadly classified in five viz. Spastic, Ataxic, Dyskinetic, Hypotonic and Mixed³.

I. Spastic CP

Spasticity is a condition with increased tone or contractions of muscles or muscle groups causing stiff and restricted movement. It is the most common type, occurring in 70% to 80% of all cases. Spastic CP is further divided into four types.

- (a) **Diplegic:** It is the most common form of the spastic CP. This is the condition that characteristically occurs in infants born prematurely. In practice, all four limbs are affected, but the upper limbs are usually only mildly or minimally involved. The lower limb involvement is symmetrical.
- (b) **Hemiplegic:** There is the involvement of the arm and leg of the same side in Hemiplegia. Left hemisphere is involved in $\frac{2}{3}$ rd of the cases.
- (c) **Monoplegic-** Child with the involvement of only one limb is said to have the monoplegic form of Cerebral Palsy, a rare form.

(d) **Quadriplegic-** In this type all four limbs are involved. This is also referred to as double hemiplegia. The upper limbs may be more severely affected than the lower. It is severest form of CP and these patients are severely disabled.

II. Ataxic- Ataxia type symptoms can be caused by damage to the cerebellum which controls balance and coordination. This is least common form of CP affecting between 5% to 10% of those afflicted by the disease.

III. Dyskinetic- Dyskinetic type is the condition possessing mixed muscle tone. This condition is characterized by involuntary movements, which may be slow and writhing or jerky as in chorea.

IV. Hypotonic- The child with hypotonic Cerebral Palsy appears floppy like a rag doll. A small proportion of patients remain hypotonic and included in this type.

V. Mixed- The most common presentation of Mixed CP, a combination of spastic and athetoid.

Signs and symptoms of Cerebral Palsy

Some children may show serious symptoms at birth and some may show signs gradually. Early intervention becomes most essential part of the management of CP. Signs and symptoms of Cerebral Palsy are⁴:-

- Feeding difficulties
- Oral problems such as sucking, chewing, and swallowing
- Persistent asymmetry of posture, tone, movements and reflexes is abnormal
- Muscle spasms or seizures
- Poor muscle control and lack of coordination
- Inability to control bladder and bowels
- Other problems with the senses, especially hearing and vision
- Delayed milestones like sitting, crawling, standing and walking
- Difficulty in speaking

DIAGNOSIS

The diagnosis of CP should be suspected if a child with low birth weight, increased tone, feeding difficulty and does not keep pace with the anticipated normal range of neurological and behavioral developments.

CT scan and MRI will help to delineate the extent of cerebral damage. Ophthalmic evaluation, hearing tests, speech evaluation, psychological education evaluation, EEG and other investigations should be done depending on the clinical profile.⁵

MANAGEMENT

Though there is no definite cure for CP, but various forms of therapy can help a patient to function and live more effectively.

AIMS OF MANAGEMENT

1. To improve the functions
2. To encourage independence

EARLY INTERVENTION

The earliest proven intervention occurs during the infant's recovery in the neonatal intensive care unit (NICU). Early intervention after diagnosis includes physiotherapy, occupational therapy etc, as per the age of the patient and Parental counselling. These may help at some extent in restoring the delayed developmental milestones and parental adjustment.

1. *Gharbha Purva Avastha Kaleena*

- *Tulya Gotriya Vivaha*
- *Dushti of Beeja, Atmakarma and Ashaya*
- *Kala Dushti*

It may include one or more therapy like Physical therapy, Occupational therapy, Speech therapy, Medication, use of orthotic devices, surgery, special Communication aids, Parental counselling as per clinical condition.

AYURVEDIC VIEW:

In Cerebral Palsy conditions such as *Pangulya, Mukatva, Jadatva* and presentations such as *Ekanga Roga, Sarvanga Roga, Pakshaghata, Pakshavadha* etc, under the group of *Vatavyadhi* are found.⁷ Contributory factors are like inappropriate *Ritu, Kshetra, Ambu* and *Bija*,⁸ *Dauhrida Avamanana*⁹, presence of *Garbhopaghatkarbhava*,¹⁰ incompatible *Garbha Vriddhikarabhava*¹¹ and improper following of *GarbhiniParicharya* as per the classics.¹²

Nidana (Etiological Factors):

The factors responsible for Cerebral Palsy may be divided into four, viz. *Gharbha Purva Avastha Kaleena, Gharbha Kaleena, Prasava Kaleena and Prasavottara Kaleena.*

3. *Prasava Kaleena*

- *Akala Pravahana*
- *Akala Prasava*
- *Abhighata*
- *Improper Pranapratyagamana*

2. *Gharbha Kaleena*

- Improper *Garbhini Paricharya*
- *Dauhrida Avamanana*
- *Mudhagarbha*

Rupa (Signs and Symptoms):

Few conditions or diseases that have some similarity in clinical presentation. These include: *Mukatva, Vaksanga, Badhira, Uchchaishruti, Akshivyudasa, Bhruvyudasa, Bahushosha, Sankocha, Khanjata, Anavasthita Chittatva, Aakshepaka, Dandaka*¹³ etc.

Chikitsa Siddhanta (Treatment principles):

After analyzing the disease phenomenon, the presentations are nearer to *Vata Vyadhi* or *Vata* predominant condition; hence principles of treatment mainly of *Vata Vyadhi* have ideal treatment modalities may include the below mentioned components:-

PREVENTIVE:

Avoidance of all the etiological factors (*Nidana*) mentioned for causation of such disease and probably CP. Taking care of unborn child throughout gestational period as major role of prenatal factors have been found. All subjects discussed earlier can be applied as preventive measure.

1. CURATIVE:

4. *Prasavottara Kaleena*

- Improper *Shareera Vriddhikara Bhava*

This aspect deals with many treatment procedures and medication. Panchakarma procedures advocated mainly for pacifying *Vata Dosha* and reducing the symptoms of *Vata Vyadhi*. These include *Snehana, Swedana, Nasya, Basti* etc like Panchakarma procedures which are beneficial in this condition where symptoms of *Vata Dosha* are prominent¹⁴. These should be performed as per clinical condition as well as condition of the patients. The role of physiotherapy is also accepted by ancient *Acharya*, the description of *Trichakra Ratha*¹⁵ in case of a childhood disability by *Acharya Kashyapa* is the example for this. Internal use of *Medhya Dravya* such as *Bramhi (Bacopa monnieri Linn.), Vacha (Acorus calamus Linn), Sankhapushpi (Convolvus pluricaulis Chois)* and other more specific *Yoga* (formulations) particularly mentioned for similar condition may have much beneficial role.¹⁶

Research works on Cerebral Palsy :

Total of four research works in *Basti* especially *Yoga Basti* is one of the treatment modalities adopted have been carried out on Cerebral Palsy in

Kaumarbhritya department, Institute for Post Graduate Teaching & Research in

Ayurveda (IPGT&RA), Gujarat Ayurved University (GAU), Jamnagar. Details are given in table 1.

TABLE 1. DETAILS OF RESEARCH WORKS

Sr. No. of Study	Name of Researcher	Year	Total No. of Pts. completed	Age Group
1.	Sagar Bhinde. <i>et al</i>	2012	8	1-10yr
2.	Pavan Gor <i>et al</i>	2013	8	1-10yr
3.	Satyawati Rathia <i>et al</i>	2014	8	1-10yr
4.	Rahul Ghuse <i>et al</i>	2015	6	6m- 10yr

Aims and objectives are to review previous clinical researches on Cerebral Palsy conducted at IPGT & RA, Jamnagar and to highlight the effective role of *Yoga Basti* in the management of Cerebral Palsy.

MATERIALS AND METHOD:

Materials are Diagnosed patient of Cerebral Palsy attending O.P.D. & I.P.D. of Kaumarbhritya, I.P.G.T. & R.A., Jamnagar were taken for the research work.

METHODS: Simple Random Sampling Method.

INCLUSION CRITERIA:

1. Age group – 6 month to 10 years of both sex.
2. Children with severe type of the disability.

Exclusion criteria:

1. Children age < 6month and > 10 years.

2. Children with other major congenital disorders.
3. Children with other diseases such as Juvenile diabetes, tuberculosis, acute infections etc.

Assessment components:

Assessment criteria include Centers for diseases Control and prevention¹⁷ (CDC) grading for motor milestones, suitable scoring pattern was prepared for Fine Motor, Language and Personal and Social milestones, Ashworth Scale¹⁸ to assess spasticity, Muscle Power grading, Manual Ability Classification System¹⁹ (MACS) to assess the function of upper limb, Gross Motor Functions Classification System²⁰ (GMFCS) were taken as assessment criteria to observe the effect of therapy.

Statistical analysis: Paired ‘t’ and Student unpaired ‘t’ test were used.

Procedures: *Yoga Basti* course was given after *Udvardana*, *Abhyanga* and *Swadana* in all of these research works.

TABLE NO. 2 DETAILS OF PROCEDURES

S. No.	Procedures	Drugs	Days
1.	<i>Udvardana</i>	<i>Yava and Kulattha</i>	5 days
2.	<i>Abhyanga</i> followed by <i>Nadi Sweda</i>	<i>Bala Taila</i>	5 days
3.	<i>Yoga Basti</i>	<i>Anuvasana</i> with <i>Bala Taila</i> <i>Asthapana</i> with <i>Madhutailika Bastiyoga</i>	8 days (5 <i>Anuvasana</i> +3 <i>Asthapana</i>)

TABLE NO. 3 BASTI SCHEDULE: YOGA BASTI WAS ADMINISTER AS PER THE SCHEDULE GIVEN BELOW:-

A	N	A	N	A	N	A	A
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A= *Anuvasana Basti*, N= *Niruha (Asthapana) Basti*

Combination of *Madhutailika Basti* :

Madhu, Saindhava, Bala Taila, Kalka of *Madanaphala* and *Shatpushpa* and *Kwatha* of *Erandamula* were mixed in sequence of *makshikam-lavanam-Sneham-kalkam* and finally *kwatham*.

Method of *Yoga Basti* administration:

Basti was given after *Abhyanga* and *Swedana* of body. *Anuvasana Basti* was given after taking food and *Asthapana* was in empty stomach.²¹

Table no. 4 Age wise dose of *Aasthapana Basti*

Age in year	<i>Prasruta</i>	<i>Tola</i>	Gms
6 month to 1yr	1/2	4	48
2	1	8	96
3	1 ½	12	144
4	2	16	192
5	2 ½	20	240
6	3	24	288
7	3 ½	28	336
8	4	32	384
9	4 ½	36	432
10	5	40	480

Dose of *Aasthapana Basti* was as mentioned in *Charaka Samhita*,²² viz.

Anuvasana Basti was given one fourth of *Asthapana Basti* as per textual guidelines.

Table of conversion as per the ayurvedic formulary of India (AFI)²³ (2 pala= 1 prasuti = 96 gm)

RESULTS

- **Sagar Bhide (2012)**²⁴ in his study (n=8) reported that *Yoga Basti* is effective to improve growth (height, weight, CC), development (head holding and sitting), spasticity of left upper limb, spasm and bilateral shoulder flexion, in patients.
- **Pavan D. Gor (2013)**²⁵ in his study (n=8) reported that *Yoga Basti* is effective to improve growth (height, weight, CC), development (sitting, standing, fine motor, language and personal & social), spasticity and power of four limbs, in patients.
- **Satyawati Rathia (2014)**²⁶ in her study (n=8) reported that *Yoga Basti* is effective to improve growth (length, weight, CC, MTC), development (sitting, standing, fine motor, language and personal & social), motor (bulk, tone and power) in patients.
- **Rahul Ghuse (2015)**²⁷ in his study (n=6) reported that *Yoga Basti* has shown significant results in assessment parameters of Head holding, Sitting, Standing, Fine motor, and Personal & Social.

Adverse drug reaction (ADR):

All the trial drugs used in *Basti* found clinically safe as no adverse drug reactions were reported during treatment period.

DISCUSSION

Cerebral Palsy is a disorder of movement, muscle tone or posture that is caused by damage of the brain during fetal life, birth or infancy".²⁸ There is no similar disease or symptom complex in Ayurvedic science that can be taken as synonym of CP. As far as etiology and clinical features are concerned, predominance of *Vata* is obvious. Observing clinical conditions, *Vata* dominant conditions or *Vata Vyadhi* are the nearest to understand its etiology, pathology and associated conditions. There are some conditions found discrete at different places in *Samhita* like *Pangulya*, *Mukatva*, *Jadatva*, *Ekanga Roga*, *Sarvanga Roga*, *Pakshaghata* and *Pakshavadha* etc. under the group of *Vata*

Vyadhi. This study shown increased muscle bulk, power and diminished muscle tone through *Abhyanga and Swedana* procedure. Contracture, stiffness, spasticity etc. get immediately alleviated and the body is softened by *Swedana* (fomentation) t.²⁹ Out of all Panchakarma, *Basti* is most important as it radically expel the morbid *Vata*, the sole *Dosha*, responsible for the movements of all *Dosha*, *Dhatu* and *Mala* within the body. *Basti* is the only *Karma*, which removes *Dosha* out of all three *Roga-Marga*. Charaka highlighted and glorified the designation of *Basti*- "*Basti Vataharanam Shreshtha*".³⁰ *Madhutailika Basti* is superior amongst all *Basti* is *Rasayana* and

promotes lusture of skin and strength.³¹ *Pakwashaya* is the seat of *Vata Dosha*. *Basti* is very helpful in pacifying *Vata*, further it is glorified that *Basti Chikitsa* as ‘*Ardha Chikitsa*’ or ‘*Purna Chikitsa*’ of *Vata*.³² By these facts, *Basti* is most important among the Panchakarma in the treatment of CP. No other *Chikitsa* has the

capacity to pacify and regulate the force of *Vata* apart from *Basti*.³³ Improvement in muscle bulk, power, tone and developmental milestones with *Yoga Basti* included, *Anuvasana Basti* has *Vata Shaman*, *Balya* and *Dhatu Poshana* and *Asthapana Basti* has *Dosha Nirharana* properties. Thus, *Udvardana*, *Abhyanga*, *Swedana* and *Yoga Basti* act on *Sharira* and *Manas Brumhana*.

CONCLUSION

Yoga Basti is effective to improve Growth (Length, Weight, Chest Circumference, Mid Thigh Circumference), Development (Sitting, Standing, Fine motor, Language and Personal & social), Motor

Components (Muscle bulk, Tone and Power) in patients. Thus it is effective to decrease the signs and symptoms of Cerebral Palsy .

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