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Effect of salavana upnaha sweda (Bandaging Sudation) on spasticity in spastic dystonic cerebral palsy: A case report

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Abstract
Cerebral palsy is defined as a non-progressive neuromotor disorder of cerebral origin. Most of the cases have multiple neurological deficits and variable mental handicaps. Most children of cerebral palsy had a combination of both spasticity and dystonia. Approximately 1-2 per 100 live births is an estimated incidence of the disease. This disorder of movement and posture causes activity limitation which persists throughout life and required long term treatment. In modern medication however muscle relaxants and physiotherapy are used but invasive procedures like Botox treatment and surgeries required in many cases as per chronicity. Ayurveda offers various treatment modalities oral as well as local in various types of panchkarma procedures. In the present case less common procedure upanahaswedana (sudation with paste of herbs and rock salt) gave encouraging result along with conventional vatashamak regimen used in case of cerebral palsy.

Keywords: Cerebral palsy, spasticity, dystonia, salavana upanaha

1. Introduction
Cerebral palsy (CP) is the most common chronic disability of childhood today and it occurs all around the world. In spite of improved obstetrical and perinatal care, CP remains with us. As a result of injury to the developing brain of fetus or infant, this disorder of movement and posture developed causing activity limitation which persists throughout life. This is of three types- spastic, dyskinetic (dystonia or athetoid movements) and ataxic. Spastic cerebral palsy is most common form which is defined as abnormally increased resistance through a joint. However some patients may have mixed type. Most children of cerebral palsy had a combination of both spasticity and dystonia. The grading of spasticity can be measured by Modified Ashworth scale etc. and by instrumented methods like EMG (electromyography) to measure muscle activity [1]. The treatment program for a child with spasticity may include physiotherapy, casting, and oral medications like muscle relaxants to reduce spasticity with dopa if tremor (dystonia) associated, intrathecal baclofen, selective dorsal rhizotomy, and orthopedic surgery. Techniques may be combined for greater efficacy to the needs of the child [2-4].

Another technique Botox therapy is usually considered when spasticity needs to be relieved in only a few muscle groups. It can be used in addition to other treatments for spasticity. The botulinum toxin (BT) medication is derived from a neurotoxin produced by bacteria (Clostridium Botulinum) and designed to be used safely without causing botulism. There are two commercially available forms of BT- Botulinum toxin type A (Botox) and Botulinum toxin type B [5, 6]. Normally, the brain sends messages via the nerves to contract the muscles by a substance called acetylcholine. BT blocks the release of acetylcholine from the nerve to the muscle, therefore the muscle relaxes. It has few adverse effects like Instability, tiredness, general weakness etc. The effect lasted by 4-4.5 months in upper and lower limbs respectively [7]. In Ayurveda, no direct correlation available for cerebral palsy. It can be termed as mastishkaghata and the spastic type can be considered as Vata predominance type of cerebral palsy because sankoch, stambh, vestanetc are karma of vata. Considering Vata predominance the treatment planning was done to pacify vatalocally as well as orally along with medhyarasayana, balya, brimhana and dhatwagnivardhankalpas [8, 9]. External treatment was vatashamak snehana, swedana, shalishastik pindasweda, Upanahand matrabasti, Rajyapnabasti as per requirement [10-12].

2. Case report
A two years old female child came to my OPD with chief complaint of bilateral spasticity of all four limbs more in lower limbs and inconsolable cry episodes in the evening.

Associated complaints were anorexia and failure to thrive. In her history of milestones all motor milestones was delayed except head control. In her perinatal history, she was full term, L.S.C.S. (due to Cephalo-pelvic disproportion) with Birth weight 2.870kg has delayed cry (by 2-3 hours) at birth. Her parents have non-consanguineous marriage and she was the first child. In her early infantile age she achieves head control at the age of 3.5 months after that all motor milestones were delayed but her speech development was normal. In her previous investigations EEG was normal, MRI finding was HIE, small calcification in right periventricular parietal lobe 6 x 5 mm. Blood and urine reports was with in normal limit. As per her parents she also has shivering of limbs when they tried to stand her or offer some object to hold. She also has persistence of clenched fist and cannot hold objects in her hands even by 1.9 year of age. She was diagnoses as spastic dystonia by renowned pediatric neurologist. She was on allopathic medications (muscle relaxants Liofen, Bexol with Dopa orally) along with physiotherapy since one year. Her shaking movements of limbs reduced significantly with these medicines with slight reduction in spasticity. But no more improvement was seen in her milestones as well as in hyper tonicity. And the modern doctors' team was planning for Botox treatment by next follow-up considering no more response to oral medication along with physiotherapy.

3. Treatment plan

In this case an effort was made to treat spastic CP by using multiple ayurvedic treatment modalities internal as well as external.

Internal and external treatment (table-1)

Date	Internal treatment	External treatment	Improvement
1st day	Kumarkalyanras 30mg+prawal pisti 60mg+shunthi churna 60mg+, jestamadh churna125mg two times with samvardhanghrita +honey two times for 10 days	Sarvang Snehana with mahamashtaila+ shalishastikpindaswedana	Inconsolable Crying episode decreased, Slight reduction in hypertonicity
Ist follow-up	Same as above + Astavargkashaya 5ml before meal for 10 days	Above karma +salavanaupanaha*on whole length of all limbs for 6 hours daily for 10 days	Significant reduction in spasticity of ankle joint and elbow joint
2nd follow-up	Start Bilwadichurna [13] 250mg + Sahastraputiabhrak bhasma10mg twice with same anupana for 10 days Astavargakashaya as above	Snehana + shalishastikpindaswedana3/week then salavanupanaha 6 hours daily for next 10 days	Botox Postponed by neurologist for next 3 months
3rd follow-up	Same as above for 15 days	Snehana daily +Upanaha 6 hours thrice in a week only on spastic parts elbow and ankle and hamstring muscles.	More improvement in tonicity And milestones
4rth follow-up	Same as above+ Cap Ksheerbala (101) once empty stomach for 15 days	Snehana daily+upanaha Twice in a week	More improvement in tonicity
5th follow-up	Same as above + matrabasti with Dhanwantarataila 15 ml for 10 days	Snehana + upanaha on hamstring part for 12 hours daily	Daily activity improved

*****Salavana means rich in salt and Upanaha means bandaging. It is a type of local svedana (sudation) in which warm medicinal (vacha, devdaru, rasna, nirgundi, dhanya etc) paste added with rock salt and oil are applied on the affected part, then bandaged with cloth /leather strap/vatahara leaf (like castor leaf/banana leaf) and leave for 12 hours as per text [11]. In this case initially the duration was 6 hours as per cooperation of patient and then slowly the duration was increased.

4. Improvement in developmental milestones-(table-2)

Serial number	Developmental milestones	Achieved by	Upper age limit of achievement (WHO)	After ayurvedic treatment
1.	Head control	3 months	By 4 months	------
2.	Sitting	1.5 year of age with support of palms forward bending	Sitting without support at 10 months	Improved sitting back straight
3.	Standing	With support by 2 year of age on toe	Standing with support by 12 months	Can stand on foot
4.	walking	Cannot walk	Walking alone by 18 months	Walk with support present (but in crounch gait)
5.	Speech	Bisyllable+ name etc by 18 months age	Words with meaning by 12-18 months	Meaningful sentences

5. Improvement in tonicity and motor function-

From grade III (difficult passive movement due to spasticity) to grade I (slight increase in muscle tone manifest by catch) as per Ashworth scaleof elbow, ankle and knee joint.

GMFCS-ER (gross motor function classification scale–expanded& revised, 2007)- from Level 3(walks using a hand held device e.g. in baby walker) to Level 2(walk with limitations).

6. Allopathic dose reduction after ayurvedic treatment-(table-3)

Serial no	Name of allopathic medicine	Action	Doses before ayurvedic treatment	Doses after days of ayurvedic treatment
1	Tab tidomet plus (100+25) (carbidopa+levodopa)	Prescribed for tremor	¼ TDS	¼ tab BD
2	Tab Liofen(5mg)	Muscle relaxant	1-1-1/2 tab	1 tab BD
3	Tab Bexol (2mg) (Trihexiphenidyl)	Muscle relaxant	½ tab TDS	½ tab BD
4	Plan for Botox tt after 15 days	Local muscle relaxant	--------	Postponed Botox by doctor for 3 months

7. Discussion

Cerebral palsy is a chronic disorder required prolonged treatment. But the oral muscle relaxant and other allopathic medication is not safe for long term use. Botox is a newer treatment other than oral medicines and physiotherapy acts locally on a group of muscles to improve limb function along with physiotherapy to avoid surgery in spasticity. But it has few adverse effects like Instability, tiredness, general weakness. The effect lasted by 4-4.5 months and multiple sitting required (near 15-40 injections) as per spasticity. All external treatments like snehana, swedana, shalishastik pindasweda and matrabasti are commonly used for vataj disordersand also used in cerebral palsy by ayurvedic experts. Salavan Upnaha is not in routine practice yet as described by Astanghrudayam sutrasthan. In this case it has been experienced that it gives significant reduction in spasticity within a short duration (7-10 days) assessed and accepted by physiotherapist as well pediatric neurologist. In this case the patient advised to continue physiotherapy, medicines and give regular monthly follow-up to allopathic pediatrician along with ayurvedic treatment. The improvement of tonicity and all dose reduction and postponement of botox was advised by pediatric neurologist and physiotherapist shows the encouraging effect of ayurvedic regimen.

8. Conclusion

We can conclude that our external treatment is as effective as modern invasive local procedures like Botox treatment to reduce the spasticity to improve the quality of life in such incurable disorder. Despite the fact the effect of both procedures lasted by few months but the Salavana upanaha is non-invasive as well ascost effective too. It is quite convenient procedure so we can continue the application of Upanaha as per severity of spasticity. We can also use it in a large area or whole limb but the botox treatment is only for selective muscle group. So it can be concluded that salavanaupanaha is a better option to treat spastic disorders.

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