

## A COMPARATIVE CLINICAL STUDY ON THE EFFICACY OF MARMA CHIKITSA AND STIMULATION OF MARMA POINTS USING TENS IN MANAGEMENT OF CERVICAL SPONDYLOSIS

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## ABSTRACT

**Background:** Cervical Spondylosis a degenerative disc disease, pain being the main first concern along with stiffness and decreased movements of neck. *Marma chikitsa* is done by employing electrical stimulation using TENS or adapting *Varma chikitsa* explained in Siddha system of medicine on *Marma* points explained by Acharya Sushruta.

**Objectives:** To compare the efficacy of *Marma* manipulation and electrical stimulation using TENS in the management of Cervical Spondylosis.

**Methods:** 40 Subjects diagnosed with Cervical Spondylosis was divided into 2 groups of 20 each. Group A was treated with TENS and Group B was treated with *Marma Chikitsa* for 7 days respectively.

**Results:** The outcome of treatment after 14 days was statistically significant based in criteria taken for study.

**Interpretation & Conclusion:** Group A showed better effect in reducing stiffness, pain, and improves angle of flexion, extension, side bending, tendon reflexes, power of hand muscle and rotation of neck. Whereas Group B was effective in improving the restricted movements, tenderness and mild improvement on power of hand muscles.

**Keywords:** Marma Chikitsa, TENS, Cervical Spondylosis

## INTRODUCTION

Neck pain is a common musculoskeletal problem which affects a substantial proportion of people in their later lives. It has long been recognized that neck pain can result in symptoms and problems being referred into the upper limb.

Cervical Spondylosis is a degenerative condition that affects the cervical spine. Pain and stiffness are the primary symptoms. Often, there are referred symptoms in the upper limb. Radiation of pain occurs from shoulder to digits along the course of the nerve indicates nerve root compression<sup>1</sup>.

Ayurvedic literature explains that *Vata Dosha* is responsible for all sorts of movements of the body and its derangements leads to loss of the same. *Vishwachi*, *Manyastambha*, *Greevastambha* and *Avabahuka* disorders comes Under *Urdhwa jatrugatavikaras* and 80 *Nanatmaja Vikaras of Vata* as separate entity<sup>2, 3</sup> with their signs and symptoms<sup>4</sup>, which are having certain similarities with cervical spondylosis, *Ayurveda* explains many vital points of anatomical and physiological significance. These points are called as '*Marma*'<sup>5</sup> *Prana* circulates throughout the body and these *Marma* points acts as junctions where *Prana* is specially seated. Any injury affecting the *Marma Sthana* results in disturbance in the flow of *Prana* leading to the manifestation of the disease. Manipulating and stimulating *Marmas* in proper manner improves flow of *Prana* in the body. In *Ayurveda* they explained *Marma* points but there is lack of description about *Marma Chikitsa*. *Siddha* system<sup>6</sup> of medicine gives detailed description about *Marma Chikitsa* and manipulation methods over these points.

Electrical stimulation of acupuncture points in the management of pain and symptoms have been explained in *Acupuncture*<sup>7</sup> of Traditional Chinese system of medicines

So proper knowledge of *Marma* along with manipulation and electrical stimulation may show better results. No study has been carried out on this, the study is planned to evaluate and to compare the efficacy of *Marma* manipulation and electrical stimulation using

Transcutaneous Electrical Nerve Stimulation (TENS) on *Marma* points in the management of Cervical spondylosis.

### Objectives

- To study the effect of manipulation of *Marma* points as in the management of Cervical Spondylosis.
- To study the effect of electrical stimulation on *Marma* points using TENS in the management of Cervical Spondylosis.
- To compare the efficacy of *Marma* manipulation and electrical stimulation using TENS in the management of Cervical Spondylosis.

### Materials and Methods

#### Sources of data

#### Clinical source:

40 Patients attending the OPD and IPD of Muniyal Institute of Ayurveda medical science were selected for the study with their consent.

#### Method of collection of data

A detailed case Proforma was prepared which included the detailed history, physical signs and symptoms of Cervical spondylosis.

#### Inclusion Criteria:

Clinically diagnosed cases of Cervical spondylosis were taken for the study.

- Subjects of age group- 20 to 70 years (Irrespective of gender).
- Patients fit for *Marma Chikitsa*
- Patients presenting with the signs and symptoms of Cervical Spondylosis.

#### Exclusion Criteria:

- Patient contraindicated for *Marma Chikitsa*
- Patient with traumatic injury of Cervical Spine
- Patient with major systemic disorders neurodegenerative condition of spine like tb malignancies etc. that may interfere with the course of treatment.

#### Laboratory Investigations:

- Complete blood test
- Plain X-ray of Cervical spine (AP and LAT)
- MRI (if necessary)

**Interventions:**

Marma Points located in neck and upper extremity involved in Cervical spondylosis was selected and Manipulation/TENS were given.

**Group-A**

Procedure - Stimulation using TENS  
Time - 20 minutes

**Duration of treatment** - 7 days  
**Follow up** - on 14<sup>th</sup> day

**Group-B**

Procedure - Marma chikitsa  
Time - 20 minutes  
**Duration of treatment** - 7 days  
**Follow up** - on 14<sup>th</sup> day

**Table 1**

S.NO.	Marma	Varma <sup>8</sup>	Manipulation technique	Stimulation technique TENS <sup>9</sup>
1.	Krikataka	Porchaikalam	Using ½ Maathirai pressure, apply clockwise rotation 3 times and gently drag up to the tip of right shoulder similarly anti-clockwise rotation 3 times and drag to the tip of the left shoulder.	A continuous electrical wave of intensity (amplitude), high frequency (10–200 pps) for 20 minutes.
2.	Amsa	Mudichu	Using ¼ Maathirai pressure, press and release 3 times	
3.	Amsaphalaka	Kaichulukki	Using ¼ Maathirai pressure, press and release 3 times	
4.	Brihati	Chhipi	Using ¼ Maathirai pressure, apply upward and downward movement 3 times	
5.	Kakshadhara	Chavvu	Press and release Kshipra and Lohitaksha marma alternately for 3 times.	
6.	Kurpara	Koimottu	Press and release 3 times by using ¼ Maathirai pressure.	
7.	Indrabasti	Teetha	Press and release 3 times by using ¼ Maathirai pressure.	
8.	Manibandha	Manibandha	Press and release 3 times by using ¼ Maathirai pressure.	
9.	Kshipra	Kawlikalam	Press and release 3 times by using pulp part of middle three fingers.	

Maathirai – pressure exerted by the pulp of the thumb.

During TENS Fig: 2, pulsed electrical currents are generated by a small battery-operated TENS device through which Currents from the TENS device was delivered through the skin by two self-adhering electrode pads.



**Fig: 1**



**Fig: 2**

**Assessment Criteria**

**Subjective**

- Visual analogue scale (for pain assessment)
- Stiffness

**Objective**

- Tenderness
- Angle of neck movement.
- Neck Disability Index, NDI.<sup>10</sup>

Measured by using Goniometer and based on degree obtained by using Goniometer, statistically values were analysed.

**Statistical analysis:** The scores of assessment criteria were analyzed statistically in the form of mean score B.T (Before Treatment), A.T. (after Treatment), Difference of mean (B.T. - A.T), S.D. (Standard Deviation), S.E (Standard Error). The *Wilcoxon Signed-Ranks Test* was carried out for within the groups and *Mann Whitney U* test for between the groups using GraphPad In-Stat and SigmaStat 4.0. The results were considered Significant or Insignificant depending upon P value.

**Observations and Results**

**Table 2**

Group A	BT Mean			DIFF	%	Wilcoxon rank test			
						SD	SEM	P	Significant
Pain	5.85	AT	3.200	2.65	45.3	0.812	0.181	<0.001	ES
		AF	2.850	3.00	52.3	1.170	0.261	<0.001	ES
Stiffness	2.45	AT	1.500	0.95	38.8	0.510	0.114	<0.001	ES
		AF	1.200	1.25	51.0	0.638	0.143	<0.001	ES
Restricted Movements	1.95	AT	1.400	0.55	28.2	0.510	0.114	<0.001	ES
		AF	1.350	0.60	30.8	0.502	0.112	<0.001	ES
Flexion	31.5	AT	39.00	-7.50	23.8	2.565	0.573	<0.001	ES
		AF	38.50	-7.00	22.3	4.413	0.986	<0.001	ES
Extension	30.25	AT	37.25	-7.25	24.0	2.552	0.570	<0.001	ES
		AF	36.00	-5.75	19.0	4.375	0.978	<0.001	ES
Rotation	36.75	AT	44.00	-7.25	19.8	3.024	0.676	<0.001	ES
		AF	46.75	-10.0	27.3	3.627	0.811	<0.001	ES
Side Bending	29.00	AT	35.25	-6.25	21.5	3.582	0.801	<0.001	ES
		AF	36.00	-7.00	24.2	3.770	0.843	<0.001	ES
Tenderness	2.10	AT	1.350	0.75	35.7	0.444	0.099	<0.001	ES
		AF	0.900	1.20	57.1	0.410	0.091	<0.001	ES
Power of Hand muscles	3.90	AT	4.45	-0.55	14.1	0.510	0.114	<0.001	ES
		AF	4.55	-0.65	16.7	0.489	0.109	<0.001	ES
Tendon reflexes	2.85	AT	3.60	-0.75	26.4	0.550	0.123	<0.001	ES
		AF	3.85	-1.00	35.1	0.458	0.102	<0.001	ES
Neck Disability Index	12.4	AT	8.45	3.95	31.9	0.825	0.184	<0.001	ES
		AF	5.35	7.05	56.9	1.317	0.294	<0.001	ES

**Table 3**

Group B	BT Mean			DIFF	%	Wilcoxon rank test			
						SD	SEM	P	Significant
Pain	6.6	AT	4.65	1.95	28.0	1.099	0.245	<0.001	ES
		AF	4.50	2.1	31.9	0.788	0.176	<0.001	ES
Stiffness	2.15	AT	1.55	0.60	28.0	0.502	0.112	<0.001	ES
		AF	1.50	0.65	30.2	0.489	0.109	<0.001	ES

Restricted Movements	1.85	AT	1.50	0.35	19	0.489	0.109	0.0156	S
		AF	1.25	0.60	32.5	0.598	0.133	0.0020	ES
Flexion	31.0	AT	34.0	-3.00	9.7	2.513	0.562	<0.001	ES
		AF	33.5	-2.50	8.2	3.441	0.769	0.0166	S
Extension	29.5	AT	33.5	-4.00	13.6	3.078	0.688	<0.001	ES
		AF	34.0	-4.50	15.3	4.560	1.020	<0.001	ES
Rotation	37.5	AT	41.25	-3.75	10.1	2.221	0.496	<0.001	ES
		AF	42.25	-4.75	12.8	4.435	0.991	<0.001	ES
Side Bending	30.5	AT	34.0	-3.50	11.5	3.285	0.734	<0.001	ES
		AF	35.0	-4.50	12.9	3.940	0.881	<0.001	ES
Tenderness	1.8	AT	1.40	0.40	22.2	0.502	0.112	0.0080	VS
		AF	1.05	0.75	41.6	0.444	0.099	<0.001	ES
Power of Hand muscles	3.85	AT	4.30	-0.45	11.7	0.510	0.114	0.0040	VS
		AF	4.35	-0.50	13.0	0.513	0.114	0.0020	VS
Tendon reflexes	2.80	AT	3.25	-0.45	16.1	0.604	0.135	0.0140	S
		AF	3.60	-0.80	28.6	0.523	0.117	<0.001	ES
Neck Disability Index	12.5	AT	9.65	2.85	22.8	0.670	0.150	<0.001	ES
		AF	7.40	5.10	40.8	1.021	0.228	<0.001	ES

**Table 4:**

PARAMETER	MEAN		Mean diff	SD		SE		P value	Result
	Group A	Group B		Group A	Group B	Group A	Group B		
Pain	3.200	4.65	-1.45	1.005	1.268	0.224	0.283	<0.001	ES
	2.850	4.50	-1.65	0.745	0.827	0.166	0.185	<0.001	ES
Stiffness	1.500	1.55	-0.05	0.760	0.604	0.170	0.135	0.805	NS
	1.200	1.50	-0.30	0.615	0.888	0.137	0.198	0.313	NS
Restricted Movements	1.400	1.50	-0.10	0.680	0.513	0.152	0.114	0.793	NS
	1.350	1.25	-0.10	0.933	0.786	0.208	0.175	0.733	NS
Flexion	39.00	34.0	5.00	4.168	4.757	0.931	1.064	0.002	VS
	38.50	33.5	5.00	5.643	3.663	1.262	0.819	0.006	S
Extension	37.50	33.5	4.00	4.443	3.663	0.993	0.819	0.0085	NS
	36.00	34.0	2.00	5.026	3.078	1.124	0.688	0.1295	NS
Rotation	44.00	41.25	2.75	4.757	5.350	1.064	1.196	0.152	NS
	46.75	42.25	4.50	5.447	5.955	1.218	1.332	0.123	NS
Side Bending	35.25	34.0	1.25	3.796	3.839	0.848	1.124	0.354	NS
	36.00	35.0	1.00	5.026	3.627	0.858	0.811	0.401	NS
Tenderness	1.350	1.40	-0.05	0.489	0.598	0.109	0.133	0.933	NS
	0.900	1.05	-0.15	0.552	0.604	0.123	0.135	0.498	NS
Power of Hand Muscles	4.450	4.30	0.15	0.510	0.470	0.114	0.105	0.414	NS
	4.550	4.35	0.20	0.510	0.489	0.114	0.109	0.276	NS
Tendon Reflexes	3.60	3.25	0.35	0.598	0.638	0.133	0.142	0.100	NS
	3.85	3.60	0.25	0.366	0.502	0.081	0.112	0.170	NS
Neck Disability Index	8.45	9.65	-1.20	1.669	2.033	0.373	0.454	0.0635	NS
	5.35	7.40	-2.05	1.461	2.257	0.326	0.504	0.0047	S

\*BT-Before treatment, \*AT-After treatment, \*AF-After follow up\* DIFF-Difference, \*SD-Standard deviation, \*SEM-Standard error of mean, \*ES-Extremely significant, \*VS-Very significant, \*S-Significant, \*NS-Nothing significant.



## DISCUSSION

### Comparison of Marma and Varma points

The anatomical location and functioning of the *marma* and *Varma* are almost similar. These are the vital points of the body where prana or the vital energy is situated. In Ayurveda *Sushruta* used *Marma* points to understand *Abhigata Lakshanas*, but in *siddha* system of medicine these points are used for diagnosis and therapeutic purpose similarly the study involves comparing it with TENS on these *Marma* points.

Group A (TENS) showed better effect in reducing stiffness, pain, and improves angle of flexion, extension, side bending, tendon reflexes, power of hand muscle, rotation of neck and NDI. whereas Group B (*Marma Chikitsa*) was effective in improving the restricted movements, tenderness and mild improvement on power of hand muscles.

**Probable mode of action of Marma chikitsa:** As in Cervical Spondylosis there is compression of the nerve fibres of the Cervical spine and all the treatment modalities are not so effective as they provide pain relief for some time. *Marma Chikitsa* which is the precise art of touching an individual in exactly the right place at a critical moment in time, for the purpose of healing and serve as point of access to the body's innate intelligence, opening the doorway to health and wellbeing can lead to release in that energy blockage and can lead to permanent cure .

The *Marma chikitsa* of stimulation or manipulation can be used as a part of a rejuvenation therapy or it could be used as preventive measure from unwanted conditions. Either way, *Marma chikitsa* is really useful to help improve or maintain a healthy balance.

### Probable mode of action of tens:

**Neurologic effect:** The gate control theory of pain by which the electrical stimulation of the large nerve fibres (pressure & touch) results in impulses that travel faster (because they are myelinated) than do those along the smaller fibres, which transmits the pain.

The electrical stimuli, pressure and touch impulses from TENS arrive faster at the levels of the spinal cord stimulate pain causing nerve endings resulting in a suppression of pain signals. Further it elicits an almost immediate response after application of TENS therapy.

**Pharmacologic effect:** TENS causes an activation of endogenous analgesic systems involving endorphins, thereby increasing their plasma levels. And gives far more analgesic efficacy than oral analgesics.

**Physiologic effect:** Mild rhythmic muscle movements will cause an increase in blood and lymph circulation which leads to reduced interstitial edema and accumulation of noxious tissue metabolites, thereby improving the physiological state of muscle which in turn leads to significant reduction in muscle spasm, stiffness and mainly pain.

## CONCLUSION

*Marma* and *Varma* are similar, technique of stimulation of *Varma* points explained in *Siddha* System of Medicine can be adopted over *Marma* points of Ayurveda system of medicine. *Marma* therapy and TENS over Ayurveda *Marma* points can be effectively implemented for the management of pain, stiffness and tenderness.

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