

(CASE REPORT)



## Unified effect of pulse electromagnetic field therapy with conventional physiotherapy in chronic cervical radiculopathy: A case report

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### Abstract

**Aim of the Study:** To find out the unified effect of pulse electromagnetic field therapy with conventional physiotherapy in cervical radiculopathy.

**Material and method:** A study carried out for six weeks in the outpatient department of MGM Physiotherapy, Aurangabad study initiated only after obtained written informed consent from patients with an explanation were given about the risk and benefits, with pre-treatment Outcome measures get filled. Outcome measure used was Neck disability index, Visual analog scale, and Upper extremity functional index, total of six sessions was applied, post treatment score recorded.

**Result:** There was a significant reduction in the pain intensity on the Visual analogue scale score was lowered from 9 to 2 after six sessions and Neck Disability Index pre-treatment was 73.33% which improved to 14.28%, Upper extremity functional scale pre-treatment was 31/80 to post-treatment improved to 72/80.

**Conclusion:** There was significant effect of unified pulsed electromagnetic field therapy along with conventional physiotherapy for chronic cervical radiculopathy.

Significant reduction of pain intensity on outcome measures for pain and neck disability and upper extremity function attributed to unified application of pulsed electromagnetic field therapy.

**Keywords:** Cervical Radiculopathy; Pulsed Electromagnetic Field Therapy; Exercises; Physiotherapy; Neck Pain

### 1. Introduction

Cervical radiculopathy is a prevalent disorder, and together with neck pain, increases the burden of surgery on patients as the number of patients get operated on for pinched nerve raised“(1).” The natural history of cervical radicular pain is favorable for prognosis with conservative management prevalence values ranged from 1.21 to 5.8 per 1,000, Cervical radiculopathy describe the neural malfunction leads to impingement and irritation nerve in the neck region and in the spine and roots of nerve“(2).”

Pain that can radiate from the neck into the arm, chest, shoulders, and upper back is known as cervical radiculopathy. It is caused by compression or obstruction of a nerve root in the spine Muscle weakness and reduced deep tendon reflexes are typical indications of impingement“(3).” Insufficiently strong evidence exits further investigation need to order

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for close the disparities are desperately needed especially as the quantity of individuals with cervical-radiculopathy is predicted to rise “(4).”

The literature generally agrees that employing manual therapy strategies in combination with physical therapy is beneficial for improving function and range of motion (AROM), while lowering disability and discomfort, even though an ultimate therapy plan for Cervicalradiculopathy has not been established.

To create precise and efficient protocols for the treatment of cervical radiculopathy, excellent randomized control trials including control groups are crucial “(5).”

For people who experience persistent, generalized neck discomfort, pulsed electromagnetic therapy (PEMF) therapy is harmless “(6).” Researchers demonstrated the efficiency of PEMF therapy in treating pain. However, very few quality literatures that investigates the effect of PEMF in patients with chronic radiculopathy, so this clinical research carried out with aim and objective to find the unified effects of Pulsed electromagnetic therapy for cervical radiculopathy.

### **1.1. Patients Information**

The patient examined was a fifty two year old female, had complain of neck pain radiating to right upper limb with unilateral muscle weakness of elbow extensor and wrist flexors, associated shoulder and arm pain with difficulty in overhead activity, and paresthesia in middle finger since two years with severe intensity. Pain was gradual in onset while doing house work. Initially patients self managed pain later on consulted to orthopedic where patient was examined and prescribed some medicine and referred for physiotherapy, now patient is under physiotherapy treatment.

### **1.2. Clinical Findings**

The subjective examination reveals that the patient’s shoulders are depressed and the patient is having tenderness on palpation at C-7 to T-1 region, upper trapezius, and sub-occipital muscle spasm. The patient was having pain during cervical flexion and side rotations. In addition, the ranges were measured with a cervical range of movement device where the ranges of cervical flexion and side rotation were limited, and extension and side flexion were in the nearby normal range.

Special test done was spurling test, shoulder abduction test, upper-limb tension test, and neck distraction test that were positive. Resisted isometrics was weak and pain-free. Sensory examination finds paresthesia in the middle finger with myotomes showing the weakness of the triceps and wrist flexors. The outcome measures used were a visual analog scale for pain intensity, neck disability index, and upper extremity functional index

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## **2. Discussion**

The case report provides an assessment and successful intervention of the female patient with cervical radiculopathy treated with therapeutic pulsed electromagnetic field therapy with conventional physiotherapy using the post isometric relaxation for elbow extensors and wrist flexors.

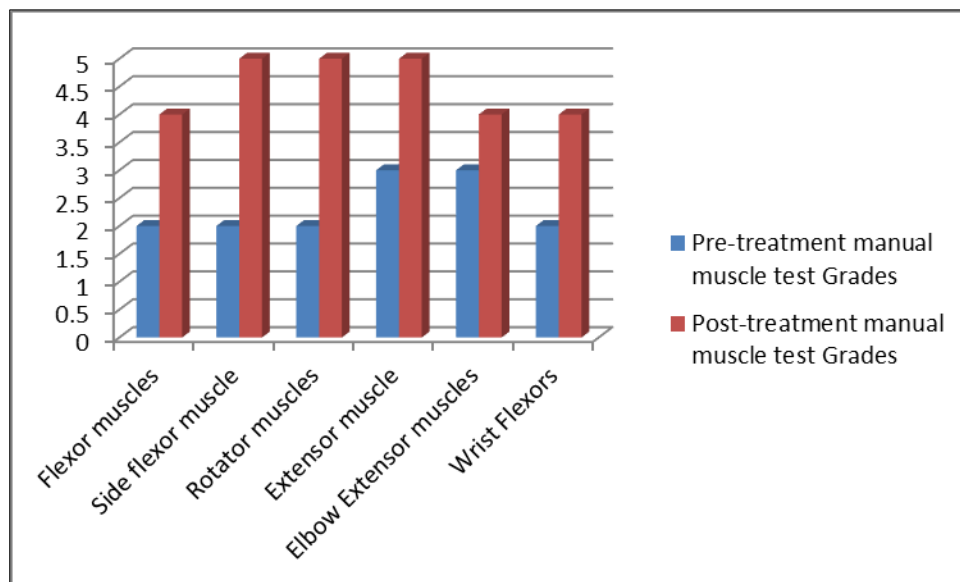
The assessment and intervention in the cervical radiculopathy pain intensity were ameliorated at each session with significant gain in range of motion. There was relief in the chronic pain, upper trapezius spasm, and from day one. Pre treatment and post treatment post comparison of different outcome measure score used for present research shown significant improvement as shown in the table 1 there was significant Improvement in manual muscle grading which shown with helps of graphical representation in figure 1

Previously research discussed the effect of pulsed electromagnetic field therapy used with a combination of conventional physical therapy protocol to improve pain intensity, disability, and lumbar range of motion as per the result found, subjects experienced significant improvements in both primary and secondary outcomes “(7).”

Current research finds that improved muscle strength after the treatment in the cervical, elbow, and wrist muscles that PIR (Post isometric relaxation) as mentioned in table 2 could be intimate reduced pain and improve joint function and range of motion in the neck. In the current trial, the pain appears to be reduced on post-treatment evaluations due to the emergence of the participants' muscle strength “(8).”

**Table 1** Range of motion, manual muscle test outcome questionnaire score pre and post unified intervention

Movement	Pre-treatment Range of Motion in (Degree)	Post-treatment Range in (Degree)
Flexion	26	70
Side flexion	25 Right side 20 Left side	50 Right side 45 Left side
Rotation	32 Right side 34 Left side	72 Right side 80 Left side
Extension	48	65
Manual Muscle Testing for cervical muscle groups	Pre-treatment manual muscle test Grades	Post-treatment manual muscle test Grades
Flexor muscles	2	4
Side flexor muscle	2	5
Rotator muscles	2	5
Extensor muscle	3	5
Elbow Extensor muscles	3	4
Wrist Flexors	2	4
Visual Analogue Scale score	Pre-treatment: 9 on VAS	Post-treatment: 2 on VAS
Neck Disability Index	33/ 45x100=73.33%	5/35x100=14.28%
Upper extremity functional scale	31/80	72/80



**Figure 1** Improvement in pre post manual muscle grading

**Table 2** Parameters for treatment PEFT and Conventional Physiotherapy

	<b>Magnetic Field</b>	<b>Frequency</b>	<b>Duration</b>
Parameter	Pulsed electromagnetic Therapy	50 Hertz	30 Minutes
Conventional Physiotherapy Exercises	Mode	Frequency	Duration
Patients education, Focused strength training exercises, Post isometric Relaxation, Postural exercises	Low- intensity Sub maximal aerobic	10 repetitions 3 set	30 minutes

### 3. Conclusion

Based on finding of the research there was significant effect of unified pulsed electromagnetic field therapy along with conventional physiotherapy for chronic cervical radiculopathy. Significant reduction of pain intensity on outcome measures for pain and neck disability and upper extremity function attributed to unified application of pulsed electromagnetic field therapy.

#### 3.1. Implication of study

Based on finding of the current research will be helpful for clinical and rehabilitation therapist providing the care and services for cervical radiculopathy and consider PEMT as adjunct therapy along with conventional therapy used for chronic cervical radiculopathy patients.

### Compliance with ethical standards

#### *Acknowledgment*

We acknowledge cooperation for patient participated in this research.

#### *Disclosure of conflict of interest*

There is no conflict of interest

#### *Statement of ethical approval*

High Ethical standards maintained from beginning to completion of the management for the patient for chronic cervical radiculopathy and followed care guideline, patient approve request to submitting the Informed written consent to treatment and publication of research finding and The present research work does not contain any investigation / treatment on animals/humans subjects in the laboratory.

#### *Statement of informed consent*

Written Informed consent form obtained from the patient before treatment.

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