



The Short Wave Diathermy's Effects on the Patients with Chronic Low Back Pain Due to Lumbar Spondylosis

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Abstract

Lumbar spondylosis is a run of the mill explanation behind chronic low back pain and chronic disability. Spondylosis may be associated nonspecifically to any degenerative conditions impacting the circles, vertebral bodies, as well as associated joints of the lumbar spine. The main objective of this study is to show the effect of short wave diathermy (SWD) on treating lower back pain caused by spondylosis. A clinical trial was conducted in the Department of Physical Medicine and Rehabilitation, BSMMU, Shahbagh, Dhaka on 105 patients who came to the hospital suffering from lower back pain due to spondylois. The study duration was from 1st March 2010 to 15 September, 2010.

Results: Among 105 patients 40% were male and 60% were female. Out of the seventy two patients, maximum patients were poor (55%) followed by middle class (40%). Notably no rich patient was found in this study. 105 patients belonged in the study group and regularly took the treatment plan assigned to them. In accordance to time point improvement, one week i.e. pre-treatment summation score with compared to at the end of one week summation score (W1) was 63.61 ± 4.17 versus 57.01 ± 4.42 . In the last time point, pre-treatment compared to post treatments total score was 63.61 ± 4.17 versus 17.69 ± 10.99 . Considering the findings from this study, it can be seen that short wave diathermy is effective against lumber spondylosis.

Keywords: Short Wave Diathermy, Chronic Low Back Pain, Lumbar Spondylosis.

Introduction

Lumbar spondylosis is a run of the mill explanation behind chronic low back pain and

chronic disability. Spondylosis may be associated nonspecifically to any degenerative conditions impacting the circles, vertebral bodies, as well as

associated joints of the lumbar spine¹. In Bangladesh, monstrous measure of money is moreover spent for the treatment of chronic low back pain on account of lumbar spondylosis anyway there is no statistics about it close by. These people become crippled and a weight for the overall population and they cannot contribute anything for the country.

Short-wave diathermy (SWD) is the most prevalent therapy for low back pain however the effectiveness of SWD isn't better than placebo treatment. It is the therapeutic utilization of high frequency current. The greater parts of the commercially accessible diathermy machines work at a frequency of 27.33mhz at a wavelength of 11 meters. Short-wave diathermy can be connected by condenser technique or by induction coil technique. Condenser plates or condenser pads are connected to the back with spacing among skin and electrodes given by 1 to 2 inch

layers of terry cloth. Acceptance coil might be connected container produces the highest temperature in the superficial musculature. In LBP when superficial muscle warming is wanted, the inductive applicators are preferred over condenser applicator, the dosimetry in swd is mellow agreeable heat seen by the patient. for the treatment of non-explicit LBP, SWD is connected to the low back region for 15-30 minutes.

A shortage of information exists in this country concerning the exact role of SWD on chronic low back pain. As there is an absence of appropriate rehabilitation, numerous patients have become permanently disabled. In this country, whatever data is open yet it isn't satisfactory about rebuilding treatment on chronic low back pain as a result of lumbar spondylosis. So, the point of this study is to find out the impacts of short wave diathermy (SWD) on the patients with chronic LBP because of lumbar spondylosis.

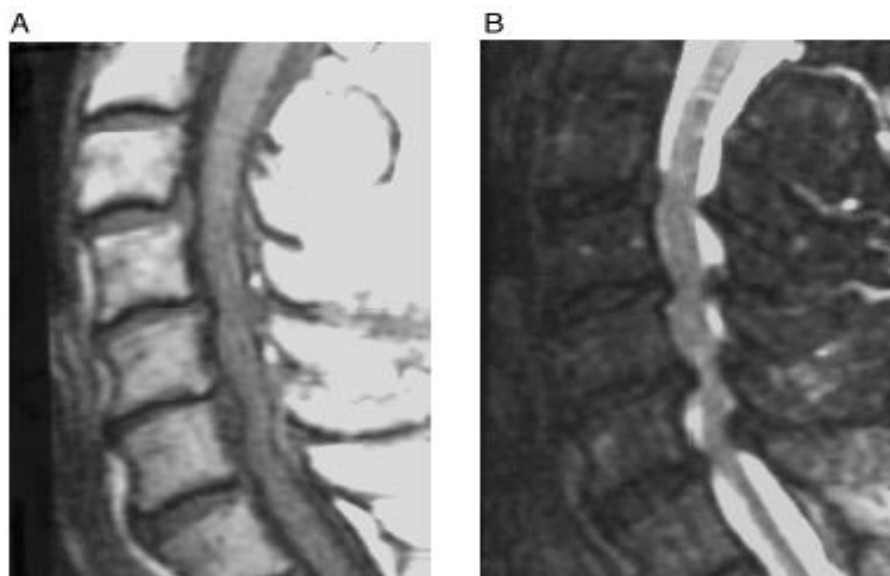


Figure 1: MRI of lumbosacral region showing disc prolapse, cord compression & spondylosis

Objectives

Main Objective

The main objective of this study is to show the effect of short wave diathermy (SWD) on treating lower back pain caused by spondylosis.

Specific Objectives

The specific objectives of the study are:

- Identifying the correct symptoms of the patients,

- Matching the patients symptoms with Spondylosis symptoms, and
- Identifying continuous SWD's effects on the study sample.

Method

Study Type

This was an observational study. This study has been conducted by using randomized clinical trial.

Inclusion Criteria of the Study

The patient has to have the following criteria;

- They have come to the clinic to get treatment for lower back pain
- Has the symptoms of spondylosis. (>03 months)
- 30-70 years of age.

Exclusion Criteria of the Study:

The patients that have psychological ailments and are suffering from the similar symptoms of spondylosis have been set as criteria for exclusion.

Study Area:

- The study area specified was Department of Physical Medicine and Rehabilitation, BSMMU, Shahbagh, Dhaka.
- A clinical trial was conducted
- 105 patients that came to the hospital to treat lower back pain
- The study duration of the study period was 1st March 2010 to 15 September, 2010.

Study Population

105 patients were selected randomly for the study according to the selection criteria. These selected patients were put into controlled treatment plan and environment. Activities of daily living (ADL) instructions were given and Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) twice daily orally was prescribed in all the groups to protect the back from pain. The core treatment plan for the patients was the continuous application of short wave diathermy (SWD).

Study Sample

These selected patients were divided into two groups (Group-A & Group-C) by lottery.

Case Group:

Group-A: In this group patients were treated with NSAID, ADLs, exercises & SWD

Total sample: 50

Control Group:

Group-C: In this group patients were treated with NSAID, ADLs & exercises only.

Total sample: 55

Exercise: Back muscle strengthening exercises in the form of Back muscle extension exercise,

pelvic tilting exercise and Back muscle flexion exercise (in case of hyperlordotic lumbar spine) was given in all the groups.

NSAIDs (Non-Steroidal Anti-Inflammatory Drugs): Naproxen (250mg) twice daily orally was prescribed in all the groups. The drug was used from only one company to avoid any difference in efficacy.

Results

A total of 105 patients with chronic LBP due to lumbar spondylosis were ultimately included in the study group. Among them 40% were male and 60% were female. Gender distribution of these patients is shown in Figure 1.

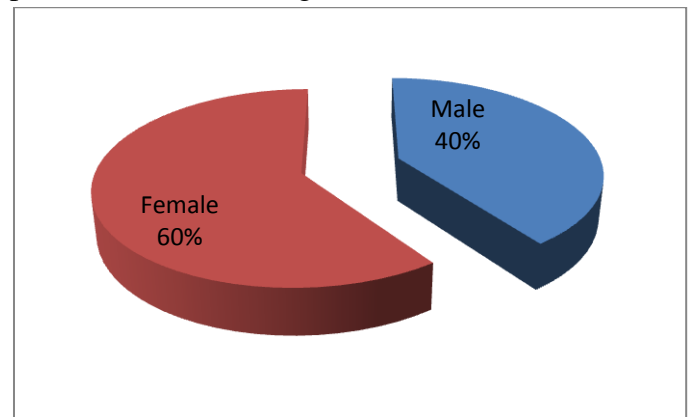


Figure 1: Sex distribution of the patients included in this study (n=105)

Out of the One hundred & five patients, maximum patients were poor (55%) followed by middle class (45%). Notably no rich patient was found in this study.

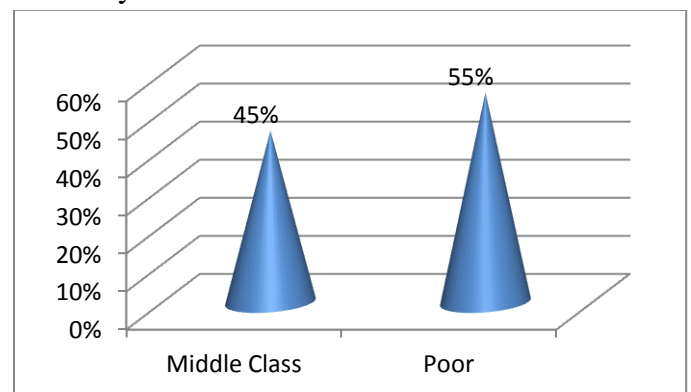


Figure 2: Socio-economic conditions of the patients (n=105)

Fifty patients were included in Group A and all of them regularly took the treatments allocated for them. Based on Oswestry Disability Index, Visual analogue Scale and Modified Zung Index score

for chronic low back pain due to lumbar spondylosis pre-treatment and post treatment data were compared statistically. There was significant improvement after treatment in Group A. In respect to time point improvement, marked improvement started to occur after one week i.e. pretreatment summation score vs at the end of one week summation score (W1) was 63.60 ± 4.18 vs 57.02 ± 4.41 ($P=0$, 95% CI=6.06 to 7.10). The improvement gradually increased day by day

and after the end of treatment significant improvement was found in our study i.e. pretreatment vs post treatment summation score was 63.60 ± 4.18 vs 17.68 ± 10.98 ($P=0$, 95% CI=42.57 to 49.27) (Table 1). This indicates that a combined treatment with NSAIDs, exercise, ADL and SWD is effective for the improvement of the patients with chronic LBP due to lumbar spondylosis.

Table 1: Treatment response in group A (n=50) at different time points

Time points	Mean ± SD	95% CI	P-value
W ₀ vs W ₁	63.60 ± 4.18 vs 57.02 ± 4.41	6.06 to 7.10	0.000
W ₀ vs W ₂	63.60 ± 4.18 vs 44.08 ± 5.10	18.12 to 20.92	0.000
W ₀ vs W ₃	63.60 ± 4.18 vs 37.38 ± 6.72	24.15 to 28.29	0.000
W ₀ vs W ₄	63.60 ± 4.18 vs 30.32 ± 8.20	30.69 to 35.87	0.000
W ₀ vs W ₅	63.60 ± 4.18 vs 24.22 ± 9.43	36.50 to 42.26	0.000
W ₀ vs W ₆	63.60 ± 4.18 vs 17.68 ± 10.98	42.57 to 49.27	0.000

Results are expressed as mean ± SD, n= number of patients, W= week

Treatment response in group C (n=55) at different time points

Fifty five patients were included in Group C and all of them regularly took the treatments allocated to them. Based on Oswestry Disability Index, Visual analogue Scale and Modified Zung Index score for chronic low back pain due to lumbar spondylosis pre-treatment and post treatment data were compared statistically. There was also significant improvement after treatment in Group C. In respect to time point improvement, marked improvement started to occur after one week i.e.

pretreatment summation score vs at the end of one week summation score (W₁) was 62.53 ± 2.99 vs 56.29 ± 3.02 ($P=0$, 95% CI=5.94 to 6.53). The improvement gradually increased day by day and after the end of treatment significant improvement was found in our study i.e. pretreatment vs post treatment summation score was 62.53 ± 2.99 vs 20.76 ± 5.16 ($P=0$, 95% CI=40.09 to 43.44) (Table 2). This indicates that a combined treatment with NSAIDs, exercise and ADL is effective for the improvement of the patients with chronic LBP due to lumbar spondylosis.

Table 2: Treatment response in group C (n=55) at different time points

Time points	Mean ± SD	95% CI	P-value
W ₀ vs W ₁	62.53 ± 2.99 vs 56.29 ± 3.02	5.94 to 6.53	0.000
W ₀ vs W ₂	62.53 ± 2.99 vs 47.31 ± 3.62	14.29 to 16.15	0.000
W ₀ vs W ₃	62.53 ± 2.99 vs 40.51 ± 4.20	20.84 to 23.20	0.000
W ₀ vs W ₄	62.53 ± 2.99 vs 33.69 ± 4.69	27.44 to 30.24	0.000
W ₀ vs W ₅	62.53 ± 2.99 vs 27.47 ± 5.22	33.48 to 36.63	0.000
W ₀ vs W ₆	62.53 ± 2.99 vs 20.76 ± 5.16	40.09 to 43.44	0.000

Results are expressed as mean ± SD, n= number of patients, W= week

Discussion

The low back pain is considered to incorporate dorsal pain found wherever between the 12 thoracic vertebra and lower buttock up to gluteal folds or anus². What's more, back pain has been named as "an illness in search of disease"³. About

40% of people express that they have included low back pain inside the latest a half year. Studies have demonstrated life time commonness as high as 84%. Most Episodes resolve with or without treatment. Some place in the scope of 80 and 90% of the health care and social expense of back pain

are for the 10% who make chronic low back pain and insufficiency. Essentially over 1% of adults in the USA are forever disabled by back pain, and another 1% is quickly impaired. The level of patients incapacitated by back pain, similarly as the cost of low back pain, has reliably extended over the span of the last 25 years⁴. Notably no rich patient was found in this study. There was significant improvement after treatment in the study after making comparing with the base line time point (Pre-treatment) with post treatment time points. In respect to time point improvement, marked improvement started to occur after one week. The improvement progressively increased day by day at a faster pace and after the end of treatment significant improvement was found in the study i.e. pretreatment versus post treatment. This indicates that a combined treatment with NSAIDs, ADL, exercise and *Short Wave Diathermy (SWD)* is effective for the improvement of the patients with chronic lower back pain (LBP) due to lumbar spondylosis, where SWD is at the core treatment and is applied in a continuous basis but its effectiveness was not significant from control group.

Shakoor MA et al⁵ in an examination directed with 102 patients in BSMMU found that SWD with NSAID is more effective than treatment with just NSAID. In another controlled examination think about Rahman S et al⁶ announced microwave diathermy (a deep heating modality) as a valuable strategy for the treatment of patients with lumbar spondylosis. Debsarma⁷ in an investigation demonstrated that deep heat modality is more compelling than superficial heat in torment the board in ceaseless low back pain patients. Manniche et al⁸ studied the role of exercise in 105 patients for 3 months. They found very satisfactory result in 44 % and only satisfactory result in 30 % (overall 74%) improvement. Kraus and Nagler⁹ studied 12,000 patients to see the effect of exercises of low back pain. 80% of their patients who received generalized mobilizing, strengthening and stretching exercise reported improvement after 6 weeks treatment. We also used back muscle

strengthening exercise for the patients. Ullah¹⁰ showed that improvement was better in the patients who received SWD than that of the patients who are not treated with SWD. In a study Keren and Yigiter¹¹ studied 60 patients and showed significant improvements in measured parameters in SWD group after the treatment. An Evidence-based Guidelines at Philadelphia¹² panel recommendation agrees with the AHCPR and BMJ guide lines that evidence for the effectiveness of the therapeutic ultrasound (deep heating modality like SWD) for low back pain is lacking. Gibson et al¹³ compared the effect of SWD and exercise on patients with low back pain and found no difference between their effects. Hossain MS¹⁴ in a study with chronic low back pain showed that the comparative effectiveness of ultrasonic therapy (a deep heating modality) and SWD was not superior to one another and their effectiveness was not significant from control group.

Conclusion

The number of the patients for the study was very small in size and the result may not be entirely conclusive. SWD seemed to improve the patients with chronic low back pain due to lumbar spondylosis but its effectiveness was not significant from control group. It may be due to important role of back muscle strengthening exercise on chronic low back pain patient. Further studies on a larger sample size will give improved and conclusive result. However, further studies on a larger sample size with longer time duration is needed for a conclusive result and analysis.

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