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ORIGINAL RESEARCH

Lumbar Spondylosis – Role of Physiotherapy using deep heat produced by electromagnetic waves in its management

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ABSTRACT

Aim: The aim is to study the effectiveness of physical therapy in the form of electromagnetic waves to create heat in the local tissue using short wave diathermy in the treatment of patients with lumbar Spondylosis. **Methods:** It is a prospective study of 60 cases of chronic low back pain with radiologically confirmed diagnosis of lumbar Spondylosis who were treated by physical therapy using a short wave diathermy along with other conventional methods for a minimum of four weeks and then evaluated its effectiveness in reducing pain levels using a visual analog scale. **Results:** Most of the patients were in the age group of 65-74 years and the mean age of the patients was 65.5 years. Lumbar Spondylosis was more common in female patients (70%) as compared to male patients (30%). Duration of symptoms ranged from 12 to 30 weeks. After treatment with physical therapy for 4 weeks, a highly significant improvement in VAS scores were found as compared to the pre-treatment levels. **Conclusion:** Patients with lumbar Spondylosis have a high prevalence of chronic low back pain. These patients have diverse diagnostic and therapeutic options and once confirmed radiologically, their treatment using physical therapy along with other conventional methods significantly improves treatment outcomes.

Keywords: Lumbar Spondylosis, Electromagnetic waves, Deep heat, Chronic Low back pain

INTRODUCTION

Lumbar Spondylosis is a degenerative disease of the spine commonly involving the lower back region. Spondylos in Greek means "a vertebra" and hence Spondylosis means de- generative osteoarthritis of the facetal joints between spinal vertebrae. Lifestyle changes in recent years due to industrialization have increased the incidence of low back pain1, causing much difficulty and morbidity2. When a back pain due to Spondylosis is present for more than twelve weeks, it is referred to as chronic low back pain3. Upright posture of the human beings is responsible for chronic low back pain in more than three fourth of the population by the age of 70 years4,5. Age related changes in the spine are found in almost all people radiologially6. Other causes of chronic low back pain apart from lumbar spondylosis include lumbar disc disease7, ankylosing spondylitis, rheumatoid arthritis, infectious diseases, osteoporosis in female population, tumors in children and fractures in adults are common causes. Risk factors for the development of lumbar Spondylosis include vibration8, occupation which require frequent forward bending and lifting heavy weight. Conventional method of treatment of low back pain includes a variety of approaches. Short wave diathermy is a machine that produces heat which can penetrate in deep tissues9 and cause vasodilatation of arterioles and cause relief in the symptoms of low back pain.

MATERIALS AND METHODS

This is a prospective study of sixty patients presenting to us in the OPD with chronic low back pain. After admission of the patient, a detailed history was recorded and a complete physical examination was done to evaluate the cause of low back pain. Radiographic studies were done with plain X-ray of lumbo-sacral spine in both AP and lateral views. Any findings of degeneration in the spine were noted and the patient is diagnosed radiologically as having

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lumbar spondylosis. All the patients were counseled before inclusion in the study and a written consent obtained from them.

Criteria for Inclusion

1. Age above 45 years and of either sex
2. Symptoms of back pain for more than four weeks
3. Radiologically diagnosed as lumbar spondylosis

Criteria for exclusion

1. Age of the patient less than 45 years
2. Symptoms for less than four weeks
3. Lumbar disc lesion
4. Infectious or inflammatory disease of spine
5. Congenital malformations like spina bifida

Management protocol: All the patients in the study group were invariably treated in the low back with electromagnetic waves producing deep heat using a short wave diathermy machine. The standard schedule of the treatment was for 15 min, 6 times in a weak for four weeks. These were combined with conventional treatment using NSAID's like paracetamol, diclofenac, aceclofenac or any muscle relaxant. Modification in the activities of daily living was also prescribed to all along with the pharmacological treatment. All the patients were followed up weekly for at least four weeks and the outcome of the treatment was recorded by a Visual Analog Scale10,11 from zero to ten. A score of '0' indicates no pain and a score of '10' indicates excruciating pain.

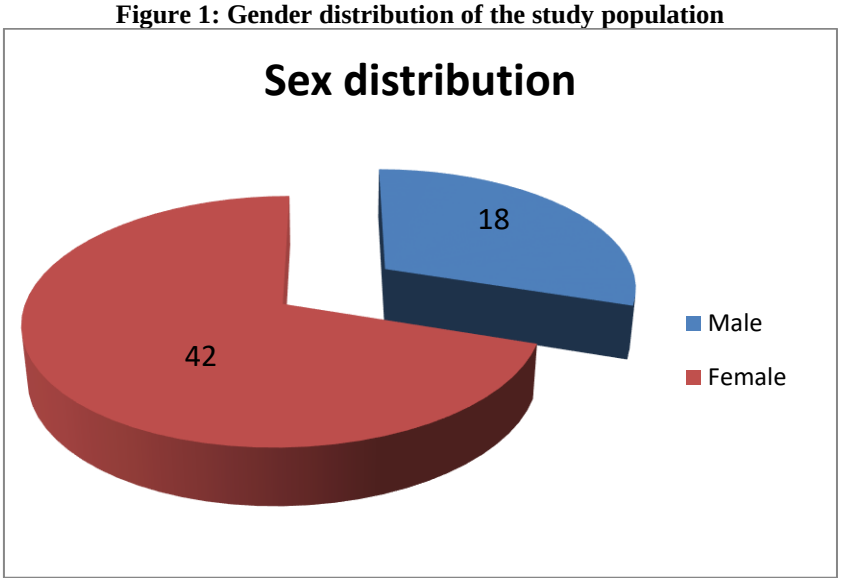
RESULTS

This study was conducted with a total of sixty patients with radiological diagnosis of lumbar spondylosis and had symptoms of low back pain for at least four weeks. These included 18 males and 42 female patients [Table 1]. The mean age of the patients in study group was 65.5 years. Most common distribution was in the age group of 65–74 years. Gender distribution shows a predominant female involvement [Figure 1]. Mean duration of symptoms was around 24 weeks. Most of the patients (85%) had history of gradual onset of pain. Maximum patients had pain of intermittent character (76%) while some (28%) had continuous pain.

Table 1: Age and sex distribution of the study population

Age group	Male	Female	No. of patients (n)	Percentage(%)
45-54	03	10	13	21.7
55-64	05	12	17	28.3
65-74	08	16	24	40.0
≥ 75	02	04	06	10.0
Total	**18**	**42**	**60**	**100.0**

Figure 1: Gender distribution of the study population



In the follow up of patients there was significant improvement in VAS score of the patients as the treatment continued. Symptoms improved from first week of treatment to fourth week gradually [Figure 2]. At the end of four weeks of the treatment there was a highly significant improvement in VAS score when compared to before treatment score. This indicates that the heat produced by the electromagnetic waves causes significant improvement of symptoms in patients with chronic low back pain due to lumbar spondylosis.

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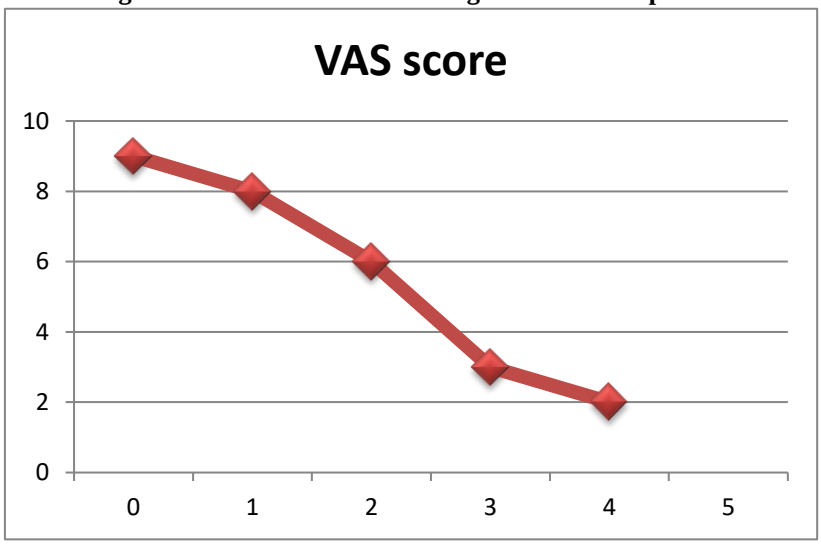
Figure 2: Mean VAS score during the treatment period



DISCUSSION

Low back pain is a very common symptom due to various reasons and one of them being Lumbar spondylosis. It is usually a diagnosis of exclusion, identified radiologically by the frequent presence of osteophytes along posterior vertebral bodies, upper end plates and lower end plates [Figure 3]. There are associated hypertrophic changes in the articular processes. There is gross osteoporosis throughout the sequence of vertebral bodies. Bridging osteophytes may sometimes impinge upon the underlying neural structures producing symptoms of nerve root compression. In the initial stages there is less correlation between the amount of osteophytes observed radiologically and the clinical symptoms since these findings are very common in many of the asymptomatic cases. This causes difficulty in assigning the symptoms to the observed radiological findings of spondylosis in patients presenting with chronic low back pain.

Figure 3: Radiograph of Lumbo sacral spine – AP and Lateral view

Risk factors for developing Spondylosis:

1. Genetically susceptive
2. Occupation involving whole body vibration such as driving
3. Repeated back trauma
4. Increased body mass index
5. Spinal loading while twisting, abnormal postures and lifting while bending

Management of lumbar spondylosis: There exist various modalities of treating this common chronic condition among the practitioners. These include the following.

1. Life style modification include proper posturing, proper methods of lifting weight etc.
2. Pharmacological treatment includes NSAID, muscle relaxants, anti depressants and opioid drugs.
3. Physiotherapy includes exercise therapy, electrical nerve stimulation, lumbar supports using belts, lumbar traction, massage therapy and producing deep heat using electromagnetic waves using a short wave diathermy machine.
4. Injection therapy includes strong anti inflammatory agents like steroids in the epidural space and in the facet joints.
5. Surgical treatment includes spinal decompression and fusion in cases who do not respond or have insufficient response to other modalities of treatment.

In a study conducted by Rahman et al.12, they compared the effect of short wave diathermy in cases of spondylosis and concluded it to be effective modality of treatment. Chard and Dieppe13 also suggested inclusion of non pharmacological treatment intervention like physiotherapy using short wave diathermy as an integral part of the treatment in case of spondylosis presenting with low back pain. A study by Lunda and Bombarien14 concluded the use of thermal modalities of treatment in spondylosis to be effective. Gibson et al15 studied more than hundred patients, Bansil et al16 also conclusively recorded effectiveness of short wave diathermy in the treatment of such patients. Rahman M M17 studied more than three hundred cases of chronic low back pain while Shakoor et al18 also recorded

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improvement in his study after treating patients of spondylosis with deep heat therapy.

CONCLUSION

Chronic low back pain due to lumbar spondylosis is a very common symptom in the general population which has been treated by a variety of treatment modalities and there is no single approach to diagnose or manage such patients on a standard protocol resulting in inconsistent and increased cost of management. Our prospective study showed that the deep heat produced by the electromagnetic waves using a short wave diathermy machine in an effective mode of treatment along with other modalities in the management of lumbar spondylosis presenting with chronic low back pain.

CONFLICT OF INTEREST: Nil

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