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SHORT TERM EFFECTS OF EXERCISES VERSUS TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION IN THE MANAGEMENT OF THE FIBROMYALGIA

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Abstract
Background and purpose: Fibromyalgia is a condition characterized by chronic widespread muscle pain and fatigue associated with reduced physical performance. The aim of this study is to investigate the short term effects of exercise and Transcutaneous electrical nerve stimulation (TENS) in the management of fibromyalgia.Methodology:The study design is Experimental, Comparative type, Inclusion criteria were patients diagnosed with fibromyalgia.Both male and female with age group between 20 to 30 years16 patients are selected according to inclusion and exclusion criteria and divided into Group-A (8) and Group-B (8).Group-A was given isometric stretching-strengthening exercises and Group-B was given TENS. Patients are analyses with visual analog scale (VAS) and Fibromyalgia impact questionnaire (FIQ) Results: statistics are done using IBM SPSS 3620.Conclusion:From this study we are concluding that isometric stretching and strengthening exercises are effective when compared to the transcutaneous electrical nerve stimulation in the management of fibromyalgia.

Keywords: Fibromyalgia, Isometric Strength-Stretching Exercises, TENS, VAS, FIQ.

Introduction

Fibromyalgia is a condition characterized by widespread musculoskeletal pain accompanied by increased tiredness, decreased sleep, loss of memory, mood swings, involuntary muscle twitching, etc. Hence fibromyalgia is often alternatively known as fibromyalgia syndrome because of the above mentioned symptoms. Along with the characteristic widespread pain in the whole body another characteristic feature of fibromyalgia is exaggerated painful response to pressure. In addition, irritable bowel syndrome, tension-type headaches are also associated with fibromyalgia syndrome. The exact underlying cause of fibromyalgia is not known but it is thought occur due to interplay of genetic,psychological,environmental and neurobiological factors.

Symptoms of fibromyalgia may begin after physical trauma, surgery, infection or significant psychological stress. In other cases, fibromyalgia symptoms gradually become evident with worsening of severity over years.
Fibromyalgia affects about 2-8% of the total population although the condition may not be diagnosed in most of the cases. This condition is most common in females than males of age group between 20-45 years. However children may also suffer from fibromyalgia.

Although the condition is neither degenerative nor life threatening, the symptoms of fibromyalgia could be very much bothersome and persistent symptoms take toll on affected persons physical and mental health. There is no permanent cure for fibromyalgia; a variety of medications can help control symptoms. Exercises, modalities, relaxation and stress reduction measures may also help.

Numerous studies have shown that physical activity and exercises are beneficial in reducing pain and improving the quality of life in patients with fibromyalgia .Hence this study compared the effects of exercises and transcutaneous electrical nerve stimulation in the management of fibromyalgia.

Methodology

Study design was Experimental, Study type was comparative study. Sampling method was convenient sampling. Sample size was 16.Study setting was held in and around Chennai. The patients were selected according to inclusion and exclusion criteria, the whole procedure of this study were explained and informed consent was obtained. The patients included are 20-30 years age group and are diagnosed as fibromyalgia by a specialist. Both men and women are selected. Patients are excluded if they any current or history of cardiovascular, neurological conditions. Metal implants in cervical region, uncontrolled blood pressure, and severe skin allergy, unstable medical or psychiatric conditions.

The selected patients were assigned into two groups GROUP-A and GROUP-B.Group-A was given isometric stretching-strengthening exercises regularly for 10 days with 3 sets and 30 seconds rest between the sets for a duration of 15 minutes per day and Group-B was given a treatment with Transcutaneous electrical nerve stimulation.The outcome measures are visual

analog scale (VAS) which is used for the measurement of pain intensity and Fibromyalgia impact questionnaire (FIQ) is used to assess the current health and functional status based on 20 questions present in the questionnaire .

Results

IBM SPSS 3620 was used for the statistical evaluation of the data.

Table 1: Pre Test And Post Test Comparison Of Visual Analog Scale (Vas) Fibromyalgia Impact Questionnaire (Fiq) Among Group A Subjects Treated With Isometric-Stretching Strengthening Exercises.

		Mean	N	Std. Deviation	Std. Error Mean	T	Sig. (2-Tailed)
Pair 1	PRETEST FIQ GA	79.7500	8	9.83797	3.47825	-3.294	.013
	POST TEST FIQ GA	91.8750	8	12.64276	4.46989		
Pair 2	PRE TEST VAS GA	6.2500	8	2.31455	.81832	3.361	0.12
	POST TEST VAS GA	3.5000	8	2.07020	.73193		

The above table infers that there was a significant reduction in pain post the treatment of isometric stretching-strengthening ($p<0.05$) and there was a good reduction in Fibromyalgia impact ($p<0.05$).

Graph-1

Pre test and Post test comparison of visual analog scale (VAS) Fibromyalgia impact questionnaire (FIQ) among Group A subjects treated with Isometric-stretching Strengthening exercises.

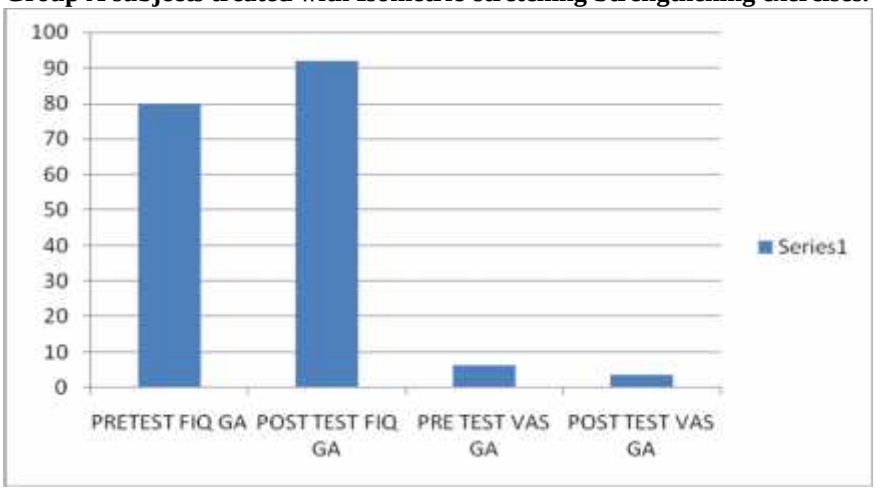

Table 2: Pre Test And Post Test Comparison Of Visual Analog Scale (Vas) Fibromyalgia Impact Questionnaire (Fiq) Among Group B Subjects Treated With Tens.

		mean	N	Std. deviation	Std. error mean	t	Sig. (2-tailed)
Pair 1	PRETEST FIQ GB	71.1250	8	9.29574	3.428654		
	POST TEST FIQ GB	70.375	8	4.68851	1.65764		
Pair 2	PRE TEST VAS GB	7.5000	8	2.67261	.94491	.258	**.803**
	POST TEST VAS GB	5.6250	8	1.18773	.741993	2.813	**.026**

The above table infers that there was a significant reduction in pain post the treatment of TENS ($p<0.05$) and there was a good reduction in Fibromyalgia impact ($p<0.05$).

Graph-2: Pre Test And Post Test Comparison Of Visual Analog Scale (Vas) Fibromyalgia Impact Questionnaire (Fiq) Among Group B Subjects Treated With Tens.

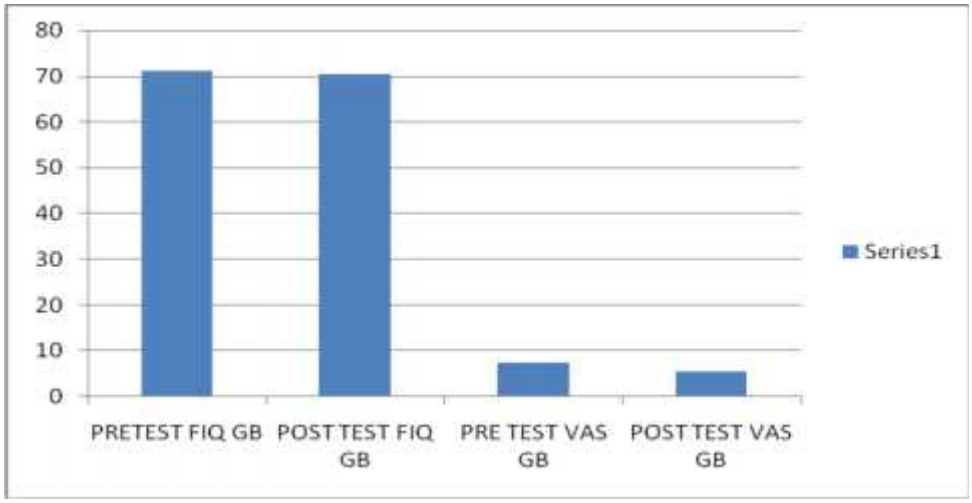

Table -3: Post Test Comparison Of Visual Analog Scale (Vas) Fibromyalgia Impact Questionnaire (Fiq) Among Group B Subjects Treated With Tens.

		Levene's Test for Equality of Variances				
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**
POST TEST FIQ	Equal variances assumed	9.047	.009	19.511	14	**.000**
	Equal variances not assumed			19.511	7.375	**.000**

This table infers that there was a significant difference between both the groups($p<0.05$)

TABLE 6

		Levene's Test for Equality of Variances				
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**
POST TEST VAS	Equal variances assumed	7.517	.016	37.865	14	**.000**
	Equal variances not assumed			37.865	7.895	**.000**

This table infers that there was a significant difference between both the groups($p<0.05$)

Discussion

This Study is focused on short term effects of Exercises Versus Transcutaneous Electrical Nerve Stimulation in the Management of the Fibromyalgia. The results of the study showed that there was a reduction of VAS scale post the treatment of TENS .This goes in hand with Ainsworth, L., et al. (2006) who concluded that Transcutaneous electrical nerve stimulation (TENS) reduces chronic hyperalgesia induced by muscle inflammation.

The type of stimulation delivered by the TENS unit aims to excite (stimulate) the sensory nerves, and by so doing, activate specific natural pain relief mechanisms. For convenience, if one considers that there are two primary pain relief mechanisms which can be activated: the Pain Gate Mechanism and the Endogenous Opioid System, the variation in stimulation parameters used to activate these two systems will be briefly considered.

Pain relief by means of the pain gate mechanism involves activation (excitation) of the A beta (Aβ) sensory fibres, and by doing so, reduces the transmission of the noxious stimulus from the 'c' fibres, through the spinal cord and hence on to the higher centre. The Aβ fibres appear to appreciate being stimulated at a relatively high rate (in the order of 80 - 130 Hz or pps). It is difficult to find support for the concept that there is a single frequency that works best for every patient, but this range appears to cover the majority of individuals. Clinically it is important to enable the patient to find their optimal treatment frequency – which will almost certainly vary between individuals.

Also the study supports the reduction of pain and fibromyalgia symptoms post treatment of exercises which go in hand with oretaga,2009 who concluded that after the exercise program, a significant decrease in IL-8, IFNgamma, and CRP were found, in parallel with a decrease in circulating concentrations of cortisol and increased levels of NA. The results of the study confirmed an elevated "inflammatory status" in the FM syndrome and strengthen the hypothesis that the benefits of exercise in FM patients are mediated, at least in part, by its anti-inflammatory effects. A better regulation of the cytokine-HPA axis feedback may be also involved.

When both the groups were compared exercises are found to have better effect than TENS over pain and Fibromyalgia symptoms. Non-pharmacological interventions in FM patients, habitual exercise programs which improve physical function and quality of life of patients and may even reduce pain. However the mechanisms through which exercise benefits FM symptoms needs to be elucidated. So further studies on boiochemical analysis of exercises should be done and lack of control group and a small sample size and short duration of the strudy are few limitation.So exercises benefits Fibromyalgia patients and it should be strongly recommended in clinical practice.

Conclusion

From the above study, Fibromyalgia subjects showed significant impairments in the quality of life. Hence we are concluding that exercises are effective when compared to the transcutaneous electrical nerve stimulation in the management of fibromyalgia.

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