Comparison of low level laser therapy and interferential current on post stroke shoulder pain

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Abstract
The objective of the study was to compare the effects of LASER therapy and Interferential current on post stroke shoulder pain. Diagnosed patients (n=38) of post stroke shoulder pain were randomly divided into two groups i.e., LASER group (LG =20 patients) and Interferential current group (IFCG=18 patients). The variables under study were pain, satisfaction, disability, and function level before and after treatment. Improvement in pain and satisfaction level after LASER therapy was significant (p<0.001). However improvement in functional level was not significant (p> 0.05). The study findings revealed that LASER therapy is more effective than Interferential current in decreasing pain and increasing satisfaction level of stroke patients having shoulder pain.

Keywords: LASER, Stroke, Shoulder Pain, Satisfaction Level.

Methods and Results
This study was conducted at Armed Forces Institute of Rehabilitation Medicine (AFIRM), Rawalpindi from February to July 2015. The study protocol was approved by Ethical committee of Riphah International University. Participants included were all diagnosed cases of stroke presenting with shoulder pain. Shoulder pain of traumatic history was excluded. Patients were randomly assigned to LASER group (n=20) and interferential current (IFCG) group (n=18) by lottery method.

LASER therapy was given to LASER group using cluster probe (Endolaser 422) of 905 nm with a power of 400mW, covering whole shoulder (superior anterior and posterior side) using grid method with 6 J/cm² energy and 5000 Hz frequency. The total treatment time was 10 min once a day for 10 days on single shoulder joint. The other group received Interferential current (IFC) treatment from IFC machine (ENRAF-NONIUS), by a four-pole method with Dipole vector (automatic). One of the alternating currents had a fixed frequency of 4000 Hz; while the frequency of the other current was adjusted between 4000 and 4250 Hz with a treatment time of 15 min after which moist superficial heat was applied for another 15 min. One session was given for 10 days. The tools used in the study included Visual analog scale (VAS), Penn shoulder score (PSS), Shoulder pain and disability index (SPADI). The data was entered into SPSS V.20, and non parametric test (Mann Whitney) was applied on all variables to determine variation among the treatment groups.

The study integrated 38 patients (Male 21, Female 17) of average age of 52.92 ± 11.67 years. 20 patients had right CVA (left affected hand) and 18 patients had left CVA (right affected hand).

There was significant difference (p<0.05) between VAS, Penn shoulder score; shoulder pain and disability index in experimental and control group (Table). But the difference was not significant for PASS pain, Pass function and SPADI disability (Table).

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Discussion

Therapeutic effects of LASER have been described in various studies with contrasting results.

A randomized control trial on the effects of low level LASER treatment (LLLT) in shoulder pain after spinal cord injury and hemiplegia showed statistically significant improvement in shoulder ROM (p=0.001) and a considerable reduction in pain than those who had not received the LASER treatment. Another study on the patients with painful shoulder and shoulder hand syndrome after stroke demonstrated that LASER produced significant improvement in pain intensity (p<0.0001), oedema of the hand, (p=0.01), DASH score (p<0.01) and level of independence (p<0.01) in experimental group.

There are different studies with weak evidence and poor quality which showed that LASER was not that much effective. A randomized placebo controlled double-blind prospective study on the effectiveness of laser in shoulder impingement, found laser to be equally effective as sham laser. However, the study had a small sample size, no long term follow up, ill-defined placebo group and using other forms of treatment interventions. Other studies had small sample size and did not meet the sample and dose recommendation criteria laid down by world association for laser therapy (WALT). The study findings indicated that LASER therapy was more effective than the interferential current in decreasing pain and increasing satisfaction level of patients. There was no significant difference in functional level of both groups. So it is concluded that LASER therapy decreases pain and increases the satisfaction level as compared to traditional physiotherapy treatments.

References