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Does the arrangement of the interferential current electrodes affect its efficacy on pain?

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Background: Interferential current (IFC) is regularly used for musculoskeletal pain reduction. The use of IFC is based on minimizing skin impedance and producing maximum stimulation at the point of intersection of the two alternating currents, deep in tissue. However, previous systematic reviews found no clear reduction effect of pain with IFC. Recently, IFC was found to induce highest voltage outside the intersection of the two currents but lowest voltage in the intersection spot. It is probably true that placing the treated area outside the intersection spot of the currents would reveal a significant pain reduction.

Materials & Methods: 31 (14 males and 17 females) with sub acute low back pain were assigned randomly to 1- external IFC application (where the most tender spot was located between tow electrodes at 2 cm outside of the external borders of the electrodes) or 2- placebo external IFC application and Comparatively 23 (9 males and 14 females) were also assigned to placebo external IFT. Subjects were assessed for their pain before and after IFC session using the parameters such as visual analogue scale (VAS), pressure pain threshold (PPT), pain distribution and range of motion (ROM).Subjects received 20 minutes of IFC at 100 Hz and comfortable stimulation intensity.

Results: The independent sample t-test has been applied to compare the experimental and control groups with pre and post measurements. The mean (SD) for experimental group is 42 (9.8) and for the control group is 44.8 (12.3). By using t-test significant difference (since $P<0.05$) was obtained for the parameters VAS and Pain distribution, which shows that the groups are having difference both statistically and clinically. There is an insignificant difference (since $P>0.05$) between two compared groups on pain threshold. Though statistically insignificant on pain threshold there is acceptable clinical difference between the two groups.

Conclusion: Despite these limitations, the study findings indicate that as a group, the findings indicate that the location of the electrodes does affect the treatment outcome on patients with sub acute low back pain on VAS and Pain distribution. However, more sample size will be required to prove the significant difference between the two groups on each parameter both clinically and statistically. Interventions to increase the efficacy of pain management in this population will be more helpful.

Biography

Dr. Al-Zahrani is a Physiotherapist (PhD) and Assistant Professor. He currently serves as the College Director of the Prince Sultan Military College of Health Sciences (PSMCHS), Dhahran, Saudi Arabia. Since 2000, he started his academic profession at PSMCHS as Instructor and Assistant Director of Applied Medical Sciences. Then years later (2004-2005), he was promoted as the Director of Applied of Medical Sciences Department. His career continues at PSMCHS and served for almost a year as the Vice Dean of Clinical Affairs and Assistant Professor. His leadership soared high and later on appointed as the College Dean on October 2010 to date. Aside from his executive role, he continually works as participating member of curriculum development of Master's Degree in Physical Therapy, part-time Consultant at King Fahd Military Medical Complex, visiting Assistant Professor at Dammam University. His academic and research efforts so far have centered on developing protocols and measurement tools for assessing and treating patients with knee injuries, evaluating non-invasive outcome measures for assessing muscle fatigues in patient with musculoskeletal disorders and evaluating the efficacy and mechanisms underpinning physical therapy interventions such as therapeutic exercises, taping, bracing, foot orthoses. He has a record of numerous paper and presentations on physiotherapy. His academic efforts so far have centered on allied health sciences and physiotherapy, which is under pipeline and has been approved by the Saudi Commission for Health Specialties, the establishment of postgraduate high clinical diploma in musculoskeletal physical therapy at PSMCHS.

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