A randomised clinical investigation into placing pain spot externally to crossing area of the two currents of interferential therapy on pain

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Introduction
Interferential therapy (IFT) has been applied in a quadripolar way so that the two currents intersect in the painful area. Clinically, no clear reduction effect of pain has been confirmed with this application method of IFT 1-3. Experimentally, the highest voltage of IFT is being induced outside the intersection area of the two used currents4. Thus, it is probably true that placing the painful area outside the intersection spot of the two currents would reveal a significant pain reduction.

Purpose
To investigate effect of IFT in pain while placing the painful spot outside the crossing point of the two currents compared to the traditional application.

Participants
One hundred sixty-two (81 males and 81 females) volunteer subjects with low back pain who met the inclusion criteria participated in this study.

Methods
Participants were randomly assigned to: 1- external IFT (painful spot was at 2 cm outside of the outer borders of the electrodes) 2- placebo external IFT 3- traditional IFT (painful spot was at the crossing area of the two currents) 4- placebo traditional IFT (Fig 1). Groups 1 and 3 received 20 min of IFT at 100 Hz and comfortable stimulation intensity. Groups 2 and 4 received placebo IFT for 20 min.

Assessment
Before and immediately after IFT session, pain severity, pressure pain threshold (PPT), pain distribution and trunk flexion range of motion (ROM) were assessed as follows:

Pain severity: Visual analogue scale (VAS); 0 to 10

Figure 1: IFT electrode placement in relation to the painful spot. The application was guided by the painful spot as per treatment group while the electrodes positions were fixed.

Figure 2: Trend of better reduction of pain severity (VAS) with true IFT applications compared to placebos, X-axis represents the IFT groups and Y-axis represents the mean with error bars at 95% CI of change in VAS.

Table 1: Pairwise comparison of significance (P-value) between groups; (A) for VAS, (B) for PPT, (C) for pain distribution and (D) for ROM.

Discussion & Conclusions
This study failed to show neither real pain reduction effect of IFT nor difference between traditional and external applications. None of the pain outcome measures assessed here, nor the ROM, were affected by IFT. That is because, both true and placebo applications reduced pain and improved the ROM to same extent. However, there was a trend of superiority of true applications to both placebos for reducing pain severity.

Recommendations
Further studies with multiple session of treatments with IFT while assuring same design done here are needed to confirm the results obtained in this work. Second, a longer treatment time is needed to be examined which may result in a different conclusion. Third, other AMFs than 100Hz are required to be examined which could produce better effects of IFT. Finally, further studies with larger sample sizes are required to clarify the trend of better effect of true IFTs appeared here.

References

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