

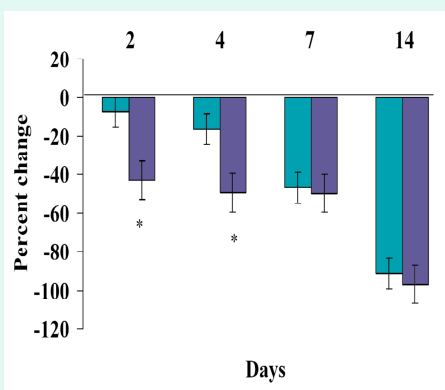
Effects of pico-tesla electromagnetic field treatment on wound healing in rats

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BACKGROUND

Study suggests that pico-telsa electromagnetic fields (PTEF) may be a safe form of adjuvant treatment for wounds, both sutured and open skin in rats



Graph of the total wound surface area with percentage change during the wound healing study in 16 PTEF treated (dark bars) and 11 control (light bars) rats. Number of rats in each group examined at each datapoint: day 2, control (n=3), treated (4); day 4, control (3), treated (4); day 7, control (2), treated (4); day 14, control (3), treated (4). Error bars represent 95% confidence intervals for the mean values. *A significant ($p < 0.001$) difference between groups (days 2 and 4).

METHODS

- Single center, placebo controlled
- 64 male Fischer-344 rats
- Incision in dorsal aspect of neck sutured (n=32)
- Incision in dorsal aspect of neck left open to heal (n=32)
- 16 rats each group not PTEF treated
- Wound treatment: PTEF treatment of 160 minutes daily for 7 days

RESULTS

- Day 14, sutured wounds in PTEF rats stronger and tougher than sutured in control rats
- Open wounds in PTEF treated rats contracted more quickly at days 2 and 4 than control rats
- Compared with control wounds, histologic changes (indicative of improved healing) in sutured and open wounds in PTEF treated rats were detected as early as day 4.
- Laser Doppler perfusion measurements, results of CBC's, serum biochemical analyses, and bacteriologic cultures were not different between groups.

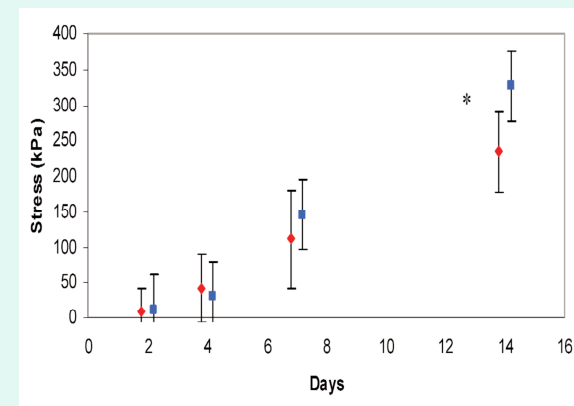
TESTS

- Tensiometry (sutured wounds)
- Digital planimetry (open wounds)
- Laser doppler perfusion imaging
- Bacteriologic culture
- Histologic examination

CONCLUSIONS

• Exposure to PTEF caused no adverse effects on clinicopathologic, histologic or bacteriologic variables tested

• Appears that PTEF is a safe form of adjuvant treatment for wounds and improves strength of sutured and speeds contraction of open wounds.



Graph of the ultimate stress or strength of sutured wounds in 16 pico-tesla electromagnetic field (PTEF)-treated (squares) and 11 control (diamonds) rats, as determined by tensiometry. Number of rats in each group examined at each datapoint: day 2, control (n = 3), treated (4); day 4, control (3), treated (4); day 7, control (2), treated (4); day 14, control (3), treated (4). Error bars represent 95% confidence intervals for the mean values. *Significant ($P < 0.05$) difference in wound strength in both groups observed on day 14, compared with values recorded