Recovery of Motorneuropathy in mice by applied electromagnetic field

Anjali Saxena, Jerry Jacobson, William Yamanashi et.al.

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BACKGROUND

To determine if extremely low frequency and weak intensity electromagnetic fields (EMF's) may supplement the endogenous electromagnetic field and that cellular function may be restored from a state of motorneuropathy.

Motorneuropathy was induced in 20 age matched mice by administration of a neurotoxin (IDPN) in order to determine the effect of EMF on forelimb grip strength, indicative of nerve functionality.

A digital grip strength meter was used to measure forelimb grip strength in all groups during experimental periods ending with the 27th week of observation.

METHODS/DESIGN

Study Design: Thirty, 4 week old Sprague-Dawley mice used as follows:

Groups	Methods
Group I (10 mice)	Control Group (no IDPN, no treatment)
Group 2 (10 mice)	Experimental, to induce motorneuropathy, the neurotoxin IDPN was put in the drinking water ad lib for 9.5 weeks and then EMF exposure protocols twice per week for 8.5 weeks.
Group 3 (10 mice)	Experimental, to induce motorneuropathy, the neurotoxin IDPN was put in the drinking water ad lib for 9.5 weeks, however, no EMF exposure but were kept in the Resonator as the placebo twice per week for 8.5 weeks.

RESULTS

For Groups 2 and 3, prior to neurotoxin, both groups of mice showed grip strength values with no significant difference. After neurotoxin and EMF exposure, Group 2 showed a steep rise in grip strength until the fourth week, Thereafter, it increased steadily up to the termination of EMF exposure at 8 1/2 weeks and was close to control Group 1 values. Group 3, in the absence of EMF exposure, had a significantly low grip strength as compared to both EMF exposed Group 2 and the control group.

CONCLUSIONS

It is suggested that the loss of nerve structure and function may be manipulated by an externally applied EMF. Further dose-response studies are required to determine a therapeutic model of EMF application in the treatment of nerve dysfunctions.