

Increased muscle regeneration after repair of divided motor nerve with neuronotrophic factors containing glue.

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Abstract:

Neuronotrophic factors (NTFs) directed to spinal cord motor neurons were collected in rats within silicone nerve regeneration chambers according to LONGO et al. (1983b). Unilateral addition of NTFs to the fibrin glue used for the repair of divided sciatic nerves improved locally nerve regeneration without affecting the controlateral side. Nerve regeneration was assessed by weight gain of the reinnervated muscles and by radioactive labelling of the acid-soluble phosphate fractions of both nerve Schwann cells and reinnervated muscle cells. Fast gastrocnemius and slow soleus muscles, the motor nerve of which had been repaired with added NTFs, were significantly heavier (21 and 28%) than their controlateral controls, and the metabolic dedifferentiation attendant on post-division nerve repair was less marked. It is suggested that this experimental nerve regeneration model is suitable to test potential nerve-active agents in vivo, under conditions close to the usual clinical setting, with, as ultimate goal, the improvement of the end-results of microsurgical repair of peripheral nerve in man.