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NERVE GROWTH FACTOR: PRETREATMENT AMELIORATES ISCHEMIC HIPPOCAMPAL NEURONAL INJURY.

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Deafferentation studies show that while removing glutamate inputs did not protect the hippocampal CA1 cells from ischemic neuronal injury, sectioning the fimbria/foraix (F/F) did. This effect is only seen 7-13 days following deafferentation, and the time course parallels the transient increase seen in hippocampal nerve growth factor (NGF) following F/F deafferentation. These experiments were performed to see if exogenous NGF could ameliorate ischemic CA1 necrosis without F/F deafferentation.

Male Wistar rats had a 14 day intra-ventricular infusion of either NGF or vehicle through an implanted cannula connected to an Alzet pump. NGF was delivered at 1.2 ug/day. After 10 days they were prepared for four vessel occlusion, and subsequently they were exposed to 15 minutes of transient forebrain ischemia and 72 hours of reperfusion. All animals were sacrificed on day 14. Hippocampal injury was graded from 0 = normal, 1 = <10%, 2 = 10-50%, 3 >50% of CAl neurons injured. A third group of contemporary sham operated controls were also exposed to 15 minutes of ischemia and 72 hours of reperfusion.

	Mean Grade CAl Damage ± SE
Control (n=6)	2.75 ± .1
Vehicle Infused (n=8)	2.25 ± .3
NGF Infused (n=13)	1.6* ± .3

* p < .05

The NGF infused animals appear to have less damage than those with vehicle infusion which in turn are less damaged than controls. It is possible that cerebral irritation through prolonged vehicle infusion induced cyto-protection (perhaps through stimulation of glia) but the effect is enhanced by nerve growth factor.

The molecular explanation for the cyto-protective effect of prolonged infusions of nerve growth factor is unknown.