

Histological effects of fibrin glue on nervous tissue: a safety study in rats.

Authors: de Vries J, Menovsky T, van Gulik S, Wesseling P

Publication Date: 2002

Abstract:

BACKGROUND: Little is known of the histologic effects of fibrin glue on normal nervous tissue. To verify the safety of intracranial application of fibrin glue, we investigated the histologic effects of fibrin glue on brain tissue and intracranial nerves of rats.

METHODS: In Group I (n = 12), bifrontal craniotomy with opening of the dura and arachnoid was performed, and on one side one droplet of fibrin glue was applied into the subarachnoid space. In Group II (n = 12), a unilateral temporal craniotomy was performed, the cavernous sinus was opened, and one drop of fibrin glue was applied to the trigeminal nerve. The controls for Group II (n = 8) were operated in the same way but without application of the fibrin glue. Rats were sacrificed at 1, 3, 7, and 28 days after surgery. The brains and nerves were processed for histologic examination and were semi-quantitatively scored for neuronal damage, gliosis, edema, fibroplasia, inflammatory reaction, axonal damage, and myelin damage.

RESULTS: No differences were found in the occurrence of neuronal damage, gliosis, edema, fibroplasia, axonal damage, or myelin damage between rats with and without fibrin glue application. In Group I the inflammatory reaction seen at Day 7 was more severe on the fibrin glue side when compared to the control side. At Day 28, however, this difference had resolved.

CONCLUSIONS: In this morphological safety study, intracranial application of fibrin glue in a rat

model does not induce extra brain damage, intracranial nerve damage, or scar tissue formation.