Effects of Tisseel fibrin glue on the central nervous system of nonhuman primates.

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Abstract:

For many years, neurosurgeons and otolaryngologic surgeons have used the fibrin glue product Tisseel to repair skull-base spinal fluid leaks and to help secure repairs following anterior cranial-base surgery. Despite the widespread use, the potential focal cerebral toxicity of this fibrin glue has never been investigated. We studied the safety of Tisseel applied directly to neural tissue (brain parenchyma, cervical cord, and C3-C6 spinal roots) of 6 monkeys (Macaca nemestrina) to determine if any underlying biochemical injury would occur. Another 3 animals that served as controls received saline rather than Tisseel. We found that median nerve electroencephalographic tracings and somatosensory evoked potentials in the experimental and control animals were identical. Likewise, cerebrospinal fluid indicators of neuronal or brain injury, inflammatory responses, and infection were negative in both groups. Finally, there were no significant differences between the two groups with respect to edema volumes and apparent diffusion coefficient values. We conclude that Tisseel does not induce an apparent inflammatory response or abnormal neurophysiologic or histologic response within 5 days of its application when it is applied directly to the brain parenchyma or onto the cervical spinal cord.