Prophylactic percutaneous sealing of lumbar postdural puncture hole with fibrin glue to prevent cerebrospinal fluid leakage in swine.

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Abstract:

UNLABELLED: We explored the effect of fibrin glue injection at the site of dural puncture on cerebrospinal fluid (CSF) leakage in a swine model. Pigs were subjected to a lumbar dural CSF puncture in the sitting position with a 17-gauge Tuohy needle. Fibrin glue 1.4 mL was injected through the same needle into the epidural space. Evans blue dye was infused through the cisterna magna 15 min later, and the appearance of dyed CSF through the skin puncture and along the needle trajectory to the dura was inspected and categorized. In seven of eight animals, the CSF leak was sealed with fibrin glue. Control animals were injected with 1.4 mL saline. A sham operation group of animals underwent cisternal dye infusion without a lumbar puncture. CSF pressure at the cisterna magna was recorded throughout the procedure. No significant differences in the leakage indicators were found between the fibrin glue-injected and sham-operated group, whereas both groups showed significant differences with respect to the control group. The fibrin glue seal was effective against CSF pressures of 24.5 [17-31] cm H(2)O. We conclude that percutaneously injected fibrin glue is effective in stopping CSF leaks after dural puncture in this animal model.

IMPLICATIONS: In this swine study, we repaired a cerebrospinal fluid leak after a dural puncture by percutaneously injecting tissue adhesive. The technique of percutaneous injection of fibrin glue seems promising for the prophylaxis of headache associated with cerebrospinal fluid leakage, and may be an alternative to an epidural blood patch.