

일반 연재(I) - 1

PREDNISOLONE TRANSFER INTO CEREBROSPINAL FLUID IN NEUROSURGICAL PATIENTS WITH CONTINUOUS EXTRAVENTRICULAR DRAINAGE

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The penetration of systemically administered prednisolone into cerebrospinal fluid (CSF) were examined in five neurosurgical patients with continuous extraventricular drainage.

Method: Blood and CSF samples were serially collected up to 12 hours after intravenous administration of prednisolone disodium phosphate(1mg/kg) over 5 minutes. Prednisolone levels in biological fluid were determined by HPLC. Free fraction of prednisolone were determined by equilibrium dialysis. The CSF and plasma concentration of prednisolone fitted simultaneously to modified PK/PD model assuming only negligible amount of prednisolone is present in CSF.

Results: Plasma concentration of prednisolone showed triphasic decay after IV administration of prednisolone. CSF concentration increased slowly and peak was achieved at 1 to 2 hours after drug administration. The terminal decay of CSF drug level was parallel to that in plasma. Ratio of CSF/plasma prednisolone concentration at equilibrium and disposition rate constant from CSF into vascular space(K_{eo}) were 0.19 ± 0.08 and 0.59 ± 0.44 /hr, respectively. AUC ratio of CSF/plasma prednisolone was 0.15 ± 0.09 . Free fraction in CSF were about 0.5 and did not show concentration dependent changes as shown in plasma.

Conclusion: From the results, we found that averaged CSF prednisolone reached about 15% of that in plasma and the disappearance of prednisolone from CSF was determined by plasma prednisolone elimination rate.