

FEVER AFTER SUBARACHNOID HEMORRHAGE WORSENS OUTCOME

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OBJECTIVE: To determine the correlation between fever after subarachnoid hemorrhage and clinical outcome.

BACKGROUND: Several studies have shown the detrimental effect of fever after brain ischemia. Recently, the incidence and prognostic significance of fever after intracerebral hemorrhage was reported. Little has been published, however, about fever in the setting of subarachnoid hemorrhage (SAH). We present data on the correlation of fever and outcome after SAH.

DESIGN/METHODS: A retrospective analysis of 76 aneurysmal SAH patients admitted to the Neurological Intensive Care Unit between January 2000 and July 2002 was conducted recording admission Hunt-Hess score, Fisher grade, Glasgow Coma Scale Score, NIHSS score, admission and daily average temperature and presence of fever ($T > 38.5^{\circ}\text{C}$). Vasospasm was defined as mean flow velocity > 120 cm/sec by TCD sonography. Outcome data included Glasgow Outcome Scale score and modified Rankin Scale score on discharge. Spearman correlation coefficient, Mann-Whitney test, and logistic regression were used to assess relationships.

RESULTS: The mean age was 55.3 ± 14.2 years. On admission, the mean Hunt-Hess score was 2.6 ± 1.3 , the Fisher grade was 2.8 ± 1.1 , the GCS score was 11.8 ± 4.1 , and the NIHSS score was 7.4 ± 10.0 . Forty patients (54.8%) developed fever at during their NICU stay including 15 (20.8%) during first 24 hours. Febrile patients were 5 times more likely to have a worse outcome at discharge compared with afebrile patients (95% CI 1.9, 13.4, $P=0.001$). For every degree increase in temperature during the NICU stay, the odds of a worse outcome increased by 2.1 (95% CI 1.2, 3.8, $P=0.01$). Adjusting for admission severity (Hunt-Hess score), the correlation between admission temperature and worse patient outcome at discharge remained significant ($P=0.05$). Fever was more common among the 40 patients with cerebral vasospasm; 70.0% developed fever during their NICU stay including 37.5% during the first 24 hours. There was a trend towards higher median admission temperatures among those who developed vasospasm (38.1°C) compared with those who did not (37.6°C) ($P=0.07$).

CONCLUSIONS: Fever is common after SAH, especially among those who develop cerebral vasospasm. Fever is associated with worse clinical outcome. Whether maintaining normothermia or inducing hypothermia improves outcome after subarachnoid hemorrhage needs to be tested in controlled trials.

Category - Critical Care/Emergency Neurology/Trauma
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