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Neurochemical monitoring in malignant infarction

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Abstract;To study the predictive significance of neurochemical monitoring in malignant infarction, we investigated the correlation between perfusional disturbances and neurochemical substances in a transient ischemia model in cats. **METHODS:** In 10 cats, the middle cerebral artery was occluded (MCAO) for 3 hours followed by 6 hours reperfusion. Microdialysis probes were inserted into the core and the perifocal site of the MCA territory. Concentrations of purine catabolites and amino acids were analyzed by HPLC. Adjacent to the microdialysis probes, laser Doppler probes measured regional CBF (LDF), strain-gauge MicroSensors measured intracranial pressure (ICP). **RESULTS:** Later in the reperfusion period, five cats developed signs of malignant edema formation including drastic drop of CPP, and finally pupil dilation. **CONCLUSIONS:** In the ischemic core, glutamate determinations during MCAO predict fatal outcome, not in the perifocal site. Secondary glutamate elevation during reperfusion is presumably caused by a drastic decrease of CPP to < 50 mmHg in the final stage of malignant infarction. However, this drop of CPP does not elevate adenosine. We assume that after reperfusion, salvage pathways are able to resynthesize IMP but not AMP. (author abst.)