Effect of arterial PCO2 on local HbO2 and relative Hb concentration in the human brain--a study with the Erlangen micro-lightguide spectrophotometer (EMPHO).

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Intraoperative investigations of local intracapillary haemoglobin oxygenation have been performed in 5 patients during neurosurgical interventions using the Erlangen microlightguide spectrophotometer (EMPHO). As the measurements can be performed in a very short period of time (approximately 60 s) the EMPHO enables rapid monitoring of local haemoglobin oxygenation in the brain. All patients received thiopental anaesthesia and were mechanically ventilated. The local measurements were performed during normoventilation (arterial PCO2--PaCO2 37.8 +/- 0.7 mm Hg) and hyperventilation (PaCO2 31 +/- 0.5 mm Hg). Hyperventilation caused a decrease in the mean SO2 from 47.8% to 41.1%. The number of SO2 values Z 50% increased from 58% to 77.8%. The possible significance of the low local SO2 values is discussed.

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