Background and Goal of Study: The electroencephalogram during anaesthesia may be affected by brain tumour. We studied whether patients with unilateral or centrally located brain tumours have different BIS readings at loss of response to name calling (LORNC) in healthy versus diseased hemispheres. We compared tumour patients with healthy control patients.

Materials and methods: After ethics committee approval, 40 ASA 1 or 2 patients (control group) and 41 patients with intracranial tumour (tumour group) received a standardized anaesthesia while measuring bilateral BIS using BIS VISTA monitor and bilateral sensor (Covidien, Dublin, Ireland). All data were collected using RUGLoopII (Demed, Temse, Belgium) Remifentanil was randomized to 3 or 5ng/ml effect-site concentration (Minto) and maintained throughout the study. Propofol was set at 2 µg/ml (Schnider) and increased with incremental steps of 0.5 µg/ml. Every 15 seconds, the observers' assessment of alertness and sedation scale was determined until loss of response to name calling (LORNC) was observed. A T-test compared BIS compatible with LORNC between healthy versus diseased hemispheres within and between control and tumour patients. Statistical significance was set at p< 0.05.

Results and discussion: No demographic differences are found between groups. Time to LORNC is significantly shorter in the tumour group (536s (+/-162)) compared to control (604s (+/-148)). CePROP at LORNC is significantly lower in the tumour group (2.89 µg/ml (+/-0.8)) compared to control (3.32 µg/ml (+/-0.86)). No statistical significant BIS asymmetry is found between left and right BIS at LORNC in any group. Significant differences in BIS between groups are shown in figure 1.

Conclusion(s): Patients with tumour located centrally in the brain or in the right hemisphere result in higher BIS at LORNC compared to control patients or patients with tumour in the left hemisphere. As no significant asymmetry is found within individuals, the performance of unilateral BIS in brain tumour patients is probably equally effective compared to bilateral BIS monitoring.

References 1. Fudickar et al, Journal of Critical Care 2009;24:545-550

Keywords:
1: Monitoring, depth of anaesthesia
2: Brain, electroencephalography
3: Brain, intracranial neoplasm
Abstract Option:
Clinical or experimental study