The response of bispectral index to laryngoscopy, comparison between hemispheres in patients with a brain tumour versus a healthy control group.

Background and Goal of Study: Electroencephalogram during anaesthesia may be affected by brain tumour.[(1)]We studied whether patients with a brain tumour have different BIS responses after laryngoscopy (LAR) We compared tumour patients with healthy control patients.
Materials and Methods: After EC approval, 40 ASA 1 or 2 patients (control) and 41 intracranial tumour patients(tumour) received standardized anaesthesia while measuring bilateral BIS (BIS VISTA$_{XP4}$ with bilateral sensor)(Covidien, Dublin, Ireland) Remifentanil was randomized to 3 or 5ng/ml effect-site concentration (Minto) and maintained throughout the study. Propofol effect-site concentration(Ce$_{PROP}$)(Schnider) was set at 2 µg/ml and increased with incremental steps of 0.5 µg/ml until loss of consciousness was observed. After 3 minutes, laryngoscopy was performed and BIS was monitored during one minute.The median BIS of 1 minute before LAR is subtracted from the median BIS one minute after LAR to obtain delta BIS for each hemisphere. We tested if delta BIS is significantly different between hemispheres in control, between healthy and diseased hemispheres in tumour and between ipsilateral control and tumour hemispheres. Statistical significance was set at $p< 0.05$.
Results and Discussion: No demographic differences were present except for age.(table 1) Delta BIS is not statistically different, neither between hemispheres in control, nor between healthy and diseased hemispheres in tumour groups.(table 2) No significant difference was found in delta BIS between ipsilateral control and pathological hemispheres.
Conclusion(s): Bilateral BIS does not provide additional information on responsiveness to a standardized stimulus. We could not observe major differences in bilateral BIS response between control and brain tumour patients. Unilateral BIS monitoring seems to be equally informative in healthy and brain tumour patients compared to bilateral monitoring.
References:[1] Fudickar et al, Journal of Critical Care 2009;24:545-550