EEG-Based Indices of Anaesthesia: Correlation between Bispectral Index and Patient State Index?
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Background
Both the bispectral and the patient state indices are derived from the electroencephalogram and have been proposed as a measure of the same clinical target, the hypnotic component of anaesthesia. The present study evaluated whether there is concordance between the bispectral and the patient state indices with regard to end-points measured simultaneously in patients undergoing surgery under general anaesthesia.

Methods
Fifty-seven patients scheduled for elective abdominal, orthopaedic (Groups 1 and 2) or cardiac surgery (Group 3) under general anaesthesia were enrolled in the study. Anaesthesia was performed using remifentanil/ sevoflurane (Group 1, 19 patients), remifentanil/propofol (Group 2, 19 patients) or sufentanil/propofol/isoflurane (Group 3, 19 patients). The bispectral and the patient state indices were simultaneously recorded. Pearson's correlation between these two indices was calculated for the complete data and each group. The percentage of bispectral index values in the recommended range for general anaesthesia (45-60) that were confirmed by levels of patient state index (25-50) was calculated and vice versa.

Results
Overall correlation between the bispectral and the patient state indices was 0.667, 0.671 in Group 1, 0.650 in Group 2 and 0.675 in Group 3 ($P < 0.01$). For values of the bispectral index between 45 and 60, only 40% of corresponding patient state index values were between 25 and 50. For patient state index values of 25-50, only 50% of the corresponding bispectral index values were in the range of 45-60.

Conclusions
Concordance between the bispectral and patient state indices is relatively weak, whereas both are thought to reflect the same clinical target, the hypnotic component of anaesthesia. As a consequence, further studies are required to compare reliability of both indices as indicators of different levels of hypnosis.