Sevoflurane decreases bispectral index values more than does halothane at equal MAC multiples

Hildebrand S Schwab, Manfred D Seeberger, Edmond I Eger, Christoph H Kindler & Miodrag Filipovic

At the minimum alveolar concentration (MAC) of inhaled anesthetics, 50% of subjects move in response to noxious stimulation. Similarly, at MAC-awake, 50% of subjects respond appropriately to command. The bispectral index (BIS) nominally measures the effect of anesthetics on wakefulness or consciousness. We postulated that the use of halothane with a larger MAC-awake/MAC ratio than sevoflurane would produce higher BIS values at comparable levels of MAC. We studied 33 unpremedicated patients anesthetized by inhalation, 18 with sevoflurane and 15 with halothane. We measured BIS before and during anesthesia at 1 MAC, both before and after tracheal intubation facilitated by fentanyl and rocuronium and then at 1.5 MAC. BIS measurements were made after meeting steady-state conditions. No surgery was performed during this study. BIS values in awake patients did not differ between the sevoflurane and halothane groups (96 +/- 2 and 96 +/- 2, mean +/- sd, respectively). At 1 MAC without and with neuromuscular blockade and at 1.5 MAC, BIS values for patients anesthetized with halothane (54 +/- 7, 56 +/- 7, and 49 +/- 7, respectively) exceeded those for patients anesthetized with sevoflurane (34 +/- 6, 34 +/- 6, and 29 +/- 5, respectively) (P < 0.0001). This finding adds to other evidence indicating that BIS is drug specific.