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Does a BIS-guided Maintenance of Anesthetic Depth Prevent Implicit Memory?

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ABSTRACT

Recent studies investigating the relationship between depth of anesthesia and implicit memory have conflicting results. Limitations of these studies include lack of standardization in surgical procedures and failure to control depth of anesthesia prospectively. We assessed implicit memory function at two different (BIS-guided and pro-spectively controlled) anesthetic depths during surgical stimulus. A list of words was played via headphones to 37 patients during orthopedic surgery under general anesthesia. The Bispectral (BIS) Index was monitored and patients were randomized to remain in a deeper (BIS 40-45) or lighter (BIS 55-60) plane of surgical anesthesia during word presentation. Postoperatively, implicit memory performance was tested using a simple auditory word-stem completion test for presented as well as non-presented words. Absence of explicit memory was evaluated by asking four standard questions regarding intraoperative awareness. All patients received sevoflu-rane and fentanyl for general anesthesia. There was no evidence of implicit memory in either study group. Hit rates for presented and non-presented words were 0.23 ± 0.14 and 0.25 ± 0.09, respectively. No explicit memory was reported by any patient. Depth of anesthesia did not affect implicit memory formation in anesthetized pa-tients undergoing surgery. General anesthesia, even at a higher BIS range, appears to abolish implicit memory as assessed by a simple word-stem completion test.

KEYWORDS

Implicit Memory, General Anesthesia, Depth of Anesthesia

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