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Cosmetic surgery: Postoperative pain and PONV – dissociative anesthesia reconsidered

A scholarly review of 80 randomized clinical trials looked for evidence of preemptive analgesia.[1] Injection of local anesthesia before incision was performed under general anesthesia. Ten percent of the randomized clinical trials administered systemic *N*-methyl-D-aspartate (NMDA) receptor antagonists, but not using a dissociative model (i.e. hypnosis first, then dissociation).[2] Møiniche, et al. concluded there was a negative potential benefit of preemptive analgesia on postoperative pain.[1] General anesthesia may only provide a stupification that prevents the brain from generating an immediate response to afferent noxious stimuli (i.e. injection of local analgesia). The dissociative model may provide non-responsiveness by blocking afferent stimulation.[2]

Using opioids and inhalational agents to provide general anesthesia may be iatrogenic causes for postoperative nausea and vomiting (PONV).[3] Under general anesthesia, surgeons may be unwittingly inflicting pain upon non-reactive patients. Postoperative pain, which may also produce PONV, may simply be a function of intraoperative pain. The literature is replete with accounts of postoperative pain issues for patients emerging from general anesthesia[1] but not with those receiving bispectral index (BIS; Aspect Medical Systems, Norwood, Mass.)-monitored propofol ketamine MAC.[2]

Note well that NMDA receptors are located only in the spinal cord and midbrain. The weight of the adult brain does not appear to vary in tandem with body weight. The brain weight of a 250-pound man is clearly not 2.5 times greater than that of a 100-pound woman. Therefore, dosing ketamine on the basis of body weight to saturate these NMDA receptors may be illogical.

The "ketamine-dose-independent-of-body-weight concept" may explain the empirical observation (over 16 years, in more than 4000 patients of more than 100 different surgeons) of successful repetition, that most adult patients will have their NMDA receptors saturated with a 50-mg ketamine dose,[2] and thus be unresponsive to local anesthetic injection. Absent noxious afferent stimuli, the brain cannot experience the wind-up phenomenon.

Hypnotic doses of propofol block ketamine hallucinations. Reproducibility of the hallucination-free administration of the ketamine has been achieved by incrementally titrating propofol to a BIS of 70 to 75 before administration of the ketamine.[2] Although a transient rise in BIS may occasionally be seen with a 50-mg ketamine dose, the rise does not preclude successful propofol monitoring with BIS.[4] Propofol hydroxylation has a 19-fold interindividual difference.[5] Therefore, greater consistency of propofol dosing and hypnosis (assuring hallucination-free ketamine administration) is more apt to occur with BIS monitoring than conventional milligrams-per-kilogram or blood level dosing regimens.

If the patient moves during the procedure, demonstrating propofol-titrated BIS levels of 60 to 75 (moderate or deep sedation with amnesia[2]) may convince the surgeon to inject more local anesthetic despite the appearance of a blanched operative field.

By eliminating both the before and during surgical sources of pain, BIS-monitored propofol ketamine MAC has allowed patients to emerge without sufficient discomfort to require opioids.[2] Conducting cases without opioids or inhalational agents has also enabled these high risk patients (i.e. non-smoking women with previous PONV, undergoing elective cosmetic surgery[3]) receiving BIS-monitored propofol ketamine MAC to experience a 0.5 percent PONV rate without the use of antiemetics.[2]

Improved safety[6] and greater patient satisfaction has been reported with BIS-monitored propofol ketamine MAC.[2] Eliminating anesthesia machine purchase/maintenance, dantrolene acquisition/replacement, scavenging system, and staff overtime for prolonged emergence or treatment of pain or PONV are additional, substantial, economic benefits of BIS-monitored propofol ketamine MAC over general anesthesia for cosmetic surgery.[2]

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DISCLOSURE

The author has no financial relationship with Aspect Medical Systems, Inc., makers of the BIS monitor.

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