

Dreaming, Awareness, and the BIS Monitor.

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Dreaming has been reported to occur in from 10-20% of children during anesthesia. Dreams are more common in younger children, are usually reported to be pleasant, and are not associated with postoperative distress. They have not been shown to be more common with any particular anesthetic agent but have been associated with the administration of succinylcholine. (*Adults who are given propofol report a higher incidence of dreaming*) Dreaming by children has been reported to occur in association with awareness by several independent sources.

Awareness during anesthesia has long been a potentially serious medical and medico-legal problem, a problem which, in recent years, seems to be reported more frequently. During 15 years and 250,000+ cases at the Hospital for Sick Children Toronto, between 1968 and 1984, I am only aware of one case of accidental intra-operative awareness. Yet a recent study suggests an incidence of 0.8 % in pediatric patients. Did we simply miss upwards of 2000 cases of awareness or has awareness become more common with the introduction of more recent anesthesia techniques? Possibly we did miss these cases, children who described true awareness were not very upset by this and seldom volunteered the information. Its occurrence is only established by very careful questioning postoperatively. If you do not dig for it you will not find it! Of interest, those children with a proven episode of awareness also had a high incidence of dreaming.

Awareness during anesthesia is a matter of considerable professional and public concern. Undoubtedly some adults have suffered extremely unpleasant and/or very painful episodes of intra-operative awareness. Many others have been aware but with less suffering. Awareness also occurs in children but according to one report seems to cause less distress, and is not associated with postoperative behavior disturbances.

Public concern is being fueled by a Hollywood movie, television, and newspaper reports – awareness under anesthesia makes good sensational material! The patient information brochure offered by Aspect Medical Systems inc. suggests that patients might ask whether a BIS monitor might be used during their operation to prevent awareness (and perhaps improve recovery!).

How effective is the BIS monitor as a depth of anesthesia gauge in infants and children, and can this help to prevent episodes of awareness? BIS monitoring is reported to reduce the chances of awareness in adults but not to absolutely prevent its occurrence. Studies of the BIS monitor when applied to children provide some conflicting results; when measured against depth of sedation conclusions range from " ...an easy to use depth of sedation monitor" to "... has limited ability to distinguish between moderate and deep Ramsay sedation levels". Other studies have reached differing conclusions as to how

well the bispectral index correlates with clinical signs of the adequacy of inhalation anesthesia in children.

Where does all this leave the clinical practitioner. There is increasing public interest and concern about the problem of intra-operative awareness and pressure to monitor our patients to prevent this disturbing complication. Unfortunately though the monitoring tools presently available are a help they may not be the long term answer. Meantime anesthesia techniques should be carefully selected to minimize the risks of awareness and further studies are vital to establish reliable methods to determine depth of anesthesia (i.e. sleep or not asleep!)

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