

Hormone treatment eases post-surgery distress in children

July 1 2009

A scary unknown for many children, the prospect of surgery can cause intense preoperative anxiety. While some amount of stress is normal, what many parents do not know is that extreme anxiety before surgery can contribute to the occurrence of emergence delirium, a distressing incidence of acute behavioral changes experienced when "waking up" from anesthesia.

Now in the July issue of *Anesthesiology*, physicians focused on reducing anxiety in children and their families report that oral treatment with melatonin before surgery can significantly reduce the occurrence of emergence delirium in children.

Affecting up to 20 percent of children who undergo surgery, emergence delirium in the post-anesthesia care unit (PACU) consists of acute behavior changes including crying, thrashing and need for restraint. According to researchers, this can also lead to the development of behavioral changes outside the recovery suite with the onset of nightmares, bed wetting and separation anxiety.

"Studies conducted in adults have revealed that oral administration of melatonin before surgery beneficially reduced anxiety levels, but relevant similar treatment data for children undergoing anesthesia and surgery are limited," said study lead author Zeev N. Kain, M.D., MBA, Chair of UC Irvine Anesthesiology and Associate Dean for Clinical Research at the UC Irvine School of Medicine.

Seeking confirmation of additional options for anxiety management, researchers first set out to determine if melatonin could decrease anxiety levels when compared to midazolam, a sedative widely used to ease preoperative anxiety. Melatonin is a hormone secreted by the pineal gland, regulates sleep, moods and reproductive cycles. Secretions of melatonin increase during exposure to light.

In a study group that consisted of 148 subjects between the ages of 2 and 8 undergoing outpatient surgery under general anesthesia, children were randomly assigned to receive midazolam or melatonin orally before surgery. Children were followed throughout their surgical experience as researchers measured anxiety and secondary study outcomes of anesthesia administration compliance and emergence behavior. Behaviors were measured using the Yale Preoperative Anxiety Scale (mYPass), the Induction Compliance Checklist and the Keegan scale.

"Results indicated that preoperative melatonin administration did not effectively reduce anxiety levels," said Dr. Kain. "However, it was found that melatonin significantly reduced the incidence of emergence delirium in these children. As 3 million children undergo surgery in the U.S. each year, these findings reveal noteworthy health care and treatment implications."

Melatonin showed a direct dose dependent effect on emergence delirium. Children in the melatonin premedication group received any of three doses of [melatonin](#): 0.05 mg/kg, .2 mg/kg and 0.4 mg/kg, while the incidence of delirium at each dose was 25 percent, 8.3 percent and 5.4 percent.

Midazolam remains the recommended premedication for [anxiety](#) reduction in [children](#) scheduled for [surgery](#).

More information: For more information visit the journal *Anesthesiology*

at www.anesthesiology.org .

Source: University of California - Irvine

Citation: Hormone treatment eases post-surgery distress in children (2009, July 1) retrieved 3 May 2024 from <https://medicalxpress.com/news/2009-07-hormone-treatment-eases-post-surgery-distress.html>

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