

Recent Controversies in Pediatric Dermatology: The Usage of General Anesthesia in Young Children



Nanette B. Silverberg, MD; Riva R. Ko, MD

Clinicians who have attempted to perform an in-office procedure on infants or young children will recognize the difficulties that arise from the developmental inability to cooperate with procedures.¹ Potential problems mentioned in the literature include but are not limited to anxiety, which is identified in all age groups of patients undergoing dermatologic procedures²; limitation of pain control³; and poor outcomes due to movement by the patient.¹ In one author's experience (N.B.S.), anxious and scared children can potentially cause injury to themselves, parents/guardians, and health care professionals by flailing and kicking; children are flexible and can wriggle out of even fine grips, and some children, especially toddlers, can be strong.

The usage of topical anesthetics can only give superficial anesthesia. They can ostensibly reduce pain and are useful for anesthesia of curettage, but their use is limited in infants and young children by the minimal amount of drug that is safe for application, as risks of absorption include methemoglobinemia and seizure activity, and especially by lack of cooperation by the child.⁴ Infiltrative anesthesia is needed for adequate pain control in addition to a topical anesthetic for many procedures.³

General anesthesia seems to be the best alternative due to associated amnesia of the events occurring including pain; immobilization and ability to produce more accurate biopsy sampling; better immobilization leading to superior cosmetic results; and reduced risk to patients, parents/guardians, and health care professionals from a flailing child. In the field of pediatric dermatology, general anesthesia often is used for excision of larger lesions and cosmetic repairs. Operating room privileges are not always easy to obtain, but many pediatric dermatologists take advantage of outpatient surgical centers associated with their medical center. A retrospective review of

226 children receiving 681 procedures at a single institution documented low rates of complications.¹

If it was that easy, most children would be anesthetized with general anesthesia. However, there are risks associated with general anesthesia. Parents/guardians often will do what they can to avoid risk and may therefore refuse general anesthesia, but it is not completely avoidable in complicated skin disease. Despite the risks, the benefit is present in a major anomaly correction such as a cleft palate in a 6-month-old but may not be there for the treatment of a wart. When procedures are nonessential or may be conducted without anesthesia, avoidance of general anesthesia is reasonable and a combination of topical and local infiltrative anesthesia can help. In the American Academy of Dermatology guidelines on in-office anesthesia, Kouba et al⁵ states: "Topical agents are recommended as a first-line method of anesthesia for the repair of dermal lacerations in children and for other minor dermatologic procedures, including curettage. For skin biopsy, excision, or other cases where topical agents alone are insufficient, adjunctive use of topical anesthesia to lessen the discomfort of infiltrative anesthetic should be considered."

A new controversy recently has emerged concerning the potential risks of anesthesia on neurocognitive development in infants and young children. These concerns regarding the labeling changes of anesthetic and sedation drugs by the US Food and Drug Administration (FDA) in December 2016 specifically focused on these risks in children younger than 3 years with prolonged (>3 hours) and repeated exposures; however, this kind of exposure is unlikely with standard pediatric dermatologic procedures.⁶⁻⁹

There is compelling evidence from animal studies that exposure to all anesthetic agents in clinical use induces neurotoxicity and long-term adverse neurobehavioral deficits; however, whether these findings are applicable in

Dr. Silverberg is from the Department of Dermatology, Mount Sinai West of the Icahn School of Medicine, New York, New York. Dr. Ko is from the Division of Anesthesiology, Columbia University, New York, New York.

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Correspondence: Nanette B. Silverberg, MD, Mount Sinai West, 425 W 59th St, Ste 8B, New York, NY 10019 (nanette.silverberg@mountsinai.org).

human infants is unknown.⁶⁻⁹ Most of the studies in humans showing adverse outcomes have been retrospective observational studies subject to multiple sources of bias. Two recent large clinical studies—the GAS (General Anaesthesia compared to Spinal anaesthesia) trial¹⁰ and the PANDA (Pediatric Anesthesia and Neurodevelopment Assessment) study¹¹—have shown no evidence of abnormal neurocognitive effects with a single brief exposure before 3 years of age (PANDA) or during infancy (GAS) in otherwise-healthy children.^{10,11}

It is important to note that the FDA labeling change warning specifically stated that “[c]onsistent with animal studies, recent human data suggest that a single, relatively short exposure to general anesthetic and sedation drugs in infants or toddlers is unlikely to have negative effects on behavior or learning.” Moreover, the FDA emphasized that “Surgeries or procedures in children younger than 3 years should not be delayed or avoided when medically necessary.”¹² Taking these points into consideration, we should offer our patients in-office care when possible and postpone elective procedures when advisable but proceed when necessary for our patients’ physical and emotional health.

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