THE CHILDREN'S MEDICAL CENTER OF DAYTON

Pediatric Clips

In anesthesia, children are not just small adults

By Judy Herting, MD

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Pediatric Clips *from The Children's Medical Center of Dayton are quick reviews of common pediatric conditions.*

Dayton Children's is the region's pediatric referral center for a 20-county area. As the only facility in the region with a full-time commitment to pediatrics, Dayton Children's offers a wide range of services in general pediatrics as well as in 35 subspecialty areas for infants, children and teens. We welcome your inquiries about services available – call 937-641-3666 or e-mail marketing @childrensdayton.org.

DAYTON CHILDREN'S

Just Right for Kids

CASE STUDY

JM is a 5-year-old male who presents to outpatient day surgery with a diagnosis of hypertrophied tonsils and adenoids and is scheduled for tonsillectomy and adenoidectomy. His parents report that JM snores and has apnea spells lasting 5 to 10 seconds that self-correct, but he is often tired during the day. No formal sleep study has been performed. His only other significant history is that of mild asthma treated with daily Singulair and an Albuterol inhaler as needed.

CASE DISCUSSION

One might think this is a simple surgery and can be done anywhere, but there are various concerns and potential pitfalls to be considered. It is critical to understand that when it comes to anesthesia care, children are not just small adults, and identifying these differences is vital for a successful surgery.

Children with a history of asthma and obstructive sleep apnea can have various physiologic changes that necessitate specialized preoperative, intraoperative and postoperative care, and possibly require postoperative overnight monitoring.

In this case, JM has relatively brief apnea but gives a history of some degree of daytime somnolence. Due to his apnea history, he will most likely have an altered response to narcotic analgesics and other sedatives. He will also be at risk for airway obstruction on induction of anesthesia. One difference between JM's surgery and that of an adult is that he will require specialized surgical instruments and other equipment sized for his age. Anatomically his airway is different than that of an adult. Placing too large of an endotracheal tube or inserting it too deeply are two common mistakes made by those who do not routinely handle pediatric cases. Children less than 10 years old tend to have less adipose tissue than adults, therefore breath sounds are transmitted easily in a child and an esophageal intubation can be missed unless one checks for breath sounds laterally in addition to anteriorly.

A second way JM's case differs from adult cases is physiologically. The increased ratio of alveolar ventilation to functional residual capacity (Va:FRC) in children like JM makes inhalation anesthesia an ideal route in pediatrics versus the typical intravenous induction in the adult. This also leads to the third way that children are different than adults: emotionally. Having an IV placed preoperatively can be stressful for a child but many pediatric anesthesiologists feel comfortable with placing the IV after the child is asleep in most cases of elective outpatient surgery in children less than 10 years old. Practicing techniques like this can greatly decrease a child's surgical fears.

In recovery, JM will continue to have airway concerns and his pain will need to be adequately managed without risking respiratory compromise. In many cases with the same history and surgery as JM there is an increased risk of apnea, poor PO intake and pain management issues. One approach to ensure JM recovers safely from surgery is overnight postoperative monitoring. The benefit of having surgery in a pediatric institution is if JM were to have complications during his surgery, pediatric subspecialists are on hand to consult on his care in many specialties of pediatrics, including pediatric surgeons, cardiologists and pulmonologists.

Pediatric anesthesiologists have spent additional time in training and practice in the specialized field of pediatric anesthesiology above and beyond their board certification following

Continued

Continued from the front.

a four year basic anesthesiology residency. Continuing education in the constantly changing realms of pediatric anesthesia, childhood obesity, sleep apnea and pharmacological agents is the passion of the pediatric anesthesiologist. Here lies the greatest difference in anesthesia care at a pediatric institution versus the average community surgery center or adult hospital.

REFERENCES

1. Peter J. Davis, Franklyn P. Cladis, Etsuro K. Motoyama - *Smith's Anesthesia for Infants and Children* ©2010 Mosby, Inc.
2. Jerrold Lerman, Charles J. Coté, David J. Steward - *Manual of Pediatric Anesthesia.* © 2009 Churchill Livingstone Elsevier, Inc.
3. www.pedsanesthesia.org

FEATURED SPECIALISTS

Judy W. Herting, MD, is a pediatric anesthesiologist on active staff at The Dayton Children's Medical Center. She has served in numerous roles, including former medical director of anesthesia, president of Pediatric Anesthesia Associates of Dayton and quality assurance chair for the department. She earned her medical degree from the Indiana University School of Medicine in Indianapolis and completed her anesthesia residency and pediatric anesthesia fellowship at The University of Cincinnati.

ANESTHESIOLOGY AT DAYTON CHILDREN'S

The pediatric anesthesiology department provides anesthesiology care and service to all patients receiving operative or procedure intervention at the medical center. The pediatric anesthesiologists care for patients from birth through 21 years of age who require any type of surgical procedure. For more information, visit childrensdayton.org or call 937-641-3477.

For further information about The Children's Medical Center of Dayton or its specialists contact us at 937-641-3666 or marketing@childrensdayton.org.

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