Propofol poses low risk in pediatric imaging studies, but risk increases with anesthesia duration

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A new study finds that propofol, a well-known anesthesia medication, has a low occurrence of adverse events for children undergoing research-driven imaging studies. The study, led by a pediatric anesthesiologist now at Children's National Medical Center, showed a low incidence of adverse events and no long term complications when propofol was used to sedate children for imaging studies that require them to be still for long periods of time.

Lead author Zena Quezado, MD, director of the Pain Neurobiology Laboratory at the Sheikh Zayed Institute for Pediatric Surgical Innovation, also found, however, that propofol, a commonly used anesthetic, does show an increased risk for respiratory, cardiovascular, and other side effects if anesthesia is administered over a long period of time or if the child has other complicating factors, including some systemic disease or an airway abnormality. It is also the first imaging study to show an increase in risk to the child with each 30 minute increment a child was under anesthesia.

The findings will help Institutional Review Boards and parents, who are dealing with the ethics debate around research involving children, evaluate the risk-benefit ratio of proposed studies, particularly those involving prolonged imaging studies.

"Getting a child to remain still in an uncomfortable environment during a

medical imaging procedure, such an MRI or CT scan, where bodily movement undermines the procedure's quality, is a near impossible task, which is why anesthesia is commonly used," Dr. Quezado said. "We know that propofol can be safely administered in pediatric research studies by well-trained anesthesiologists who are prepared to anticipate and respond to all events, which minimizes the risk of adverse issues. We are applying the findings of this research immediately in our own work, and will help others ensure that every study involving children is safe, ethical and effective."

The study reviews 1,480 propofol anesthetics in 607 children over an eight year period at the NIH's Clinical Research Center and appears in the June 7 issue of Archives of Pediatric and Adolescent Medicine. A total of 98 notable events were observed in 63 patients. Only one event led to an escalation of planned therapy. No events led to prolonged hospitalization.

The increased risk related to severity of systemic disease is in concert with clinical studies that show increasingly severe systemic disease is associated with an increased risk for anesthesia related complications, while patients with airway abnormalities are predisposed to airway obstruction.

Dr. Quezado recently joined Children's National Medical Center from NIH. She plays a leading role in the Sheikh Zayed Institute's Pain Medicine Initiative, which aims to improve surgical outcomes through the reduction and elimination of pain. The Institute creates unprecedented opportunities for cross-disciplinary collaborations among leaders from a broad spectrum of sciences, united under one roof to expedite the research into development of more effective treatments.

Team science is often talked about but rarely achieved," Quezado said. "The Institute's balance between clinical and research work and its

robust support of truly collaborative partnerships among doctors and scientists, provides tremendous translational research opportunities. That allows us to advance research more quickly and build upon studies like this one, in our ultimate quest to eliminate pain and improve outcomes for children."

Provided by Children's National Medical Center