

3rd International Conference on Surgery and Anesthesia

November 17-19, 2014 Chicago, USA



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Anesthesia and the Developing Brain

Anesthesia is often necessary for children at any age and is considered a safe intervention. However, experimental studies in animals (rodents, primates, etc.) suggest the possibility of neurotoxicity in the developing brain exposed to anesthetics by inducing apoptosis or interfering with neurogenesis. This negative effect is dose-dependent and seen in periods of early development. Long-term neurocognitive changes in learning, memory, attention, and behavior were observed later in life. It is extremely difficult to link these laboratory findings to clinical practice. Large cohort retrospective studies remain inconclusive. There is no clear evidence that exposure to anesthetic drugs up to the age of 3 years is associated with neurocognitive behavioral deficits. Currently, three prospective studies (GAS, PANDA, and MASK studies) are underway to shed light on these issues. Until then, no change in pediatric anesthesia practice should be done.

Biography

Yaacov Gozal, M.D is an Associate Professor of Anesthesiology at the Hebrew University, Jerusalem. He is the Chair of the Department of Anesthesiology, Perioperative Medicine and Pain Treatment and director of the operating rooms at ShaareZedek Medical Center, Jerusalem, Israel. He has published more than 100 peer reviewed papers and serves as an editorial board member of the Journal of Pharmacology and Toxicology.

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