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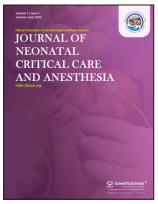

Editorial

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Journal of Neonatal Critical Care and Anesthesia (JNCCA) is the official journal of Neonatal Anesthesia Society (NAS), a registered society since 2020. The CME and conferences were conducted under its banner in a virtual mode due to ongoing COVID risk. The NASCON 2024 will be in the physical mode in New Delhi, India.

There is a great need for a platform to publish research and clinical material in the highly specialized field of neonatal critical care and anesthesia. The JNCCA aims to bridge this gap providing one such platform for clinicians, scientists, budding anesthesiologists, and experts to publish case reports, research articles, and advances in anesthesia for neonates keeping in mind their unique anatomy, physiology, pharmacology, especially the transitional process taking place in this crucial period of life, which makes them extremely vulnerable. The target audience is wide and large – academician, physician, surgeons, anesthesiologists, neonatologists, oncologists, trainee postgraduates, residents, faculty, and specialists.

NEONATAL MORTALITY, SURGERY, AND ANESTHESIA

Neonatal age is the most vulnerable period in the life of a human being with a huge burden of morbidity and mortality. As per United Nations International Children's Emergency Fund report of September 2020, the average global neonatal mortality rate was 17 in 2019 with more than 2 million deaths. These figures are alarming, as nearly 1/3rd deaths occur within the first 24 h of birth and 75% within first week of life. Average neonatal mortality ranges from 1 to 44 deaths/1000 live births (the World Health Organization 2022 January), with major causes being birth asphyxia, infections, prematurity, and congenital anomalies.[1]

Several factors impact the outcome after surgery, and these do not occur after birth, but have already been influenced by various antenatal factors and course of pregnancy.[2] Being already vulnerable, when these babies present for surgery, the risk multiplies. Besides the risk factors prevalent in newborns, other factors that contribute to a high perioperative mortality include low birth weight, immature and sensitive vital body systems, especially respiratory, cardiovascular, renal, hepatobiliary, nervous and neuromuscular, and known or undiagnosed medical problems (chromosomal defects, genetic syndromes, medical diseases, and congenital defects), all superimpose on the surgical pathology.

Neonatal surgical mortality (NSM) is up to 80% depending on the patient's clinical condition and surgery undertaken.[3] For better post-surgical outcome, baby should be operated in the Safe Period, that is, after 60 weeks post-conceptual age (PCA). The earliest a baby may be operated is 44 weeks PCA. For example, if a baby is born at 36 weeks PCA, it may be operated at 8 weeks (2 months) age but best if operated at the age of 24 weeks (6 months) age. Thus, in a premature baby, the age at which it can be safely operated is more (PCA being unchanged). A surgery undertaken within 44 weeks PCA is considered an emergency and life-threatening.

Neonatal anesthesia is the most challenging subspecialty of anesthesia such that even a minor short day care procedure becomes extremely risky. Role of anesthetist is to provide best conditions for surgery and in turn more favorable outcome. This requires not only skilled anesthesia and OR team but also skilled surgical team and good perioperative care. It is important to note that in neonates, no surgery can be considered as elective (risk free) and also that "they are at high risk even if no anesthesia is administered." Even the most minor procedure is extremely risky. Hence, every neonate should receive best of care, preferably in a tertiary care center with trained specialists and other supporting staff and facilities.

Anesthesia-related morbidity and mortality is higher in neonates than in children and adults. The newly born baby is still adaptating to the extrauterine environment,

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which continues into the neonatal period. Anesthetist's greatest concern is the risk of reverting these transitional changes whenever adverse or stressful conditions prevail, chiefly hypoxemia, hypercarbia, acidosis, hypovolemia, hypothermia, pain, and increase in pulmonary vascular resistance and/or decrease in systemic vascular resistance with return of the right to left intracardiac shunting and venous admixture. Anesthetist must remain vigilant and proactively prevent occurrence of these events.[4] Anesthesiologists must well prepared to manage and resuscitate a baby, who may be in a arrest or pre-arrest situation anytime in the perioperative period.

PERIOPERATIVE NEONATAL RESUSCITATION (PONR) VERSUS NEONATAL RESUSCITATION

Perioperative resuscitation is different from neonatal resuscitation at birth due to totally different scenarios that do not fall in the domain of the neonatologist, due to accompanying surgical disorder in the preoperative period, open abdomen/chest/cranium, etc., in the intraoperative period, and recovery from surgery and anesthesia in the postoperative period. Being extremely critical, the perioperative care setup should be ready with appropriate equipment, monitors and drugs to diagnose and manage any untoward events (hypovolemia, shock, bradycardia, hypotension, apnea, hypoxemia, and hypothermia). Staff taking care of these neonates should be trained in the ABC of resuscitation beginning with early recognition of a pre-arrest like situation and prompt correct treatment.

ETHICAL CONSIDERATIONS

Neonatal anesthesia is an upcoming, ever advancing field. It has its limitations due to ignorance, fear, and acceptance of poor outcomes in these babies. Today, there is a remarkable advancement in various aspects of neonatal surgery, and all procedures besides minor are being undertaken including major abdominal and thoracic, open heart, and minimally invasive (laparoscopic/endoscopic/Robotic) surgeries. Anesthesiologists must keep pace with these advancements, and as we accept the challenges associated with such procedures, neonatal anesthesia will grow as a super specialty. Despite anesthesia being used regularly in these patients, research is limited, while knowing that research is the only way to move forward. Any research needs Hospital Ethical Committee clearance, but members of the Ethical Committees are very reluctant to permit research in neonates, especially in subjects, drugs, and techniques not explored earlier. Ethical committees need to understand the necessity of conducting these researches.

The first issue of JNCCA (January – June 2024) will contain articles on perioperative neonatal resuscitation, ethical concerns in neonatal care, case reports PG section, a book review, last conference proceedings, and much more.

Dr. Usha Saha,

Editor in Chief – JNCCA.

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