Clinical Pearl: Periviability: Old Perspective and New Insights

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I was at an insightful talk on February 5, 2020, about new aspects of the discussions we have as clinicians with our colleagues and families when we are called about pregnancies from 22-25 weeks gestation. The talk was for the residents and was given by Drs. Kelly Nelson Kelly and Marin Arnolds, two of our former residents and neonatal fellows, who are now attending neonatologists. Marin is at NorthShore University HealthSystem, Evanston Hospital, a level III neonatal intensive care unit (NICU), and Kelly is at Comer Children's Hospital Level IV NICU and is now the Associate Medical Director of the NICU.

First, Marin discussed aspects of the historical perspective beginning with the death of Patrick Kennedy, the son of President John and Jackie Kennedy, who was a premature infant born at 34 weeks in August of 1963 and died of respiratory distress syndrome. His passing stimulated a lot of interest in advancing the care of premature newborn infants. She then discussed Baby Doe, the laws that were passed to protect premature newborn infants including the Child Abuse and Prevention Act (CAPTA), Emergency Medical Treatment and Labor Act (EMTALA- 1986), and the recommendations from American College of Obstetrics and Gynecology (ACOG) and the American Academy of Pediatrics (AAP) re the care of extremely premature infants at 21-25 weeks gestation that have influenced the clinical decision making of these infants and the discussion with parents. CAPTA was passed in 1974 and was most recently reauthorized in January 2019.

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I began my pediatric residency in 1977 and finished my neonatal fellowship in 1982. I practiced clinical neonatology from 1982-1989. As I listened to Marin review this valuable and thoughtful information, I began to relive the effects of these laws and guidelines during this critical time. We were very thoughtful about our discussions, management, and care of our infants in the NICU as providers were being reported for not providing the basic care of babies in the NICU and were investigated by the government watchdog investigators during this time. Fortunately, I did not have the experience of being investigated. When we had discussions with families who were 23-24 weeks gestation, at that time, after we talked with our maternal-fetal medicine colleagues, we talked with the family on a case-by-case basis. I had situations when parents talked about how this was their last chance as they had been trying to have a baby without success. We individualized our delivery room management each time. We were prepared to instill surfactant as per our research protocol at 24 weeks gestation, and I did for a 500-gram infant born at 24 weeks gestation in around 1983 with excellent results. With each baby, we spent time keeping their parents up to date with the clinical course of their infant as soon as we had new information. This was a time when we began to have bedside cranial ultrasound and used the Papile classification for periventricular-intraventricular hemorrhage (4). This was all new for us at that time, and we continued to reassess each infant and family and make decisions on a case-by-case basis.

In listening to Kelly and Marin, there is the additional clinical experience over the years and additional tools like the Tyson calculator and data from the NICHD neonatal research network with outcome data re survival and neurodevelopmental outcomes to refer to in discussions with the family prior to delivery of the infant (references). The discussion of the approach to the periviable infant begins at 21 weeks gestation with MFM re corticosteroid therapy for lung maturation and monitoring of the fetus. Periviability and potential delivery room resuscitation begins at 22 weeks with the "gray area" being 22-24 weeks gestation. (5,6). The parents are provided survival and neurodevelopmental outcome data from national references and from the individual NICUs as well. Some NICUs will also present these data from other NICUs, for example, the University of Iowa or international data (references). Each case is individualized with the parents, MFM, and neonatal providers. The parents are given a tour of the NICU, and further counseling about what they can expect re care of their infant is provided.

In the delivery room, once it is decided to provide basic resuscitation, some general principles include (1) gentle initiation of lung expansion to supplement the infant's own efforts, (2) provision of supplemental oxygen beginning with around 30% FiO_2 and adjusting with oxygen saturation values measured by pulse oximetry postductally to maintain appropriate oxygen saturation values as per the first 5 minutes post-delivery, (3) instillation of surfactant as an appropriate time post-delivery if it is suspected the infant has clinical and/or radiographic evidence of respiratory distress syndrome (RDS).

More of the NICUs have adopted and set up "small baby or micro-preemie units" to provide specialized care with decreased stimulation, the optimal range for oxygen saturation of the infants, optimal nutrition with maternal breast milk, midline positioning, kangaroo care, and gentle ventilation if necessary (references).

Once the baby is born and stabilized, there are also ongoing discussions and counseling with parents and providers about the clinical course of the infant with input from everyone involved. The parents are given daily updates and, with significant changes in clinical status, the family is notified and things are explained.

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