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Neurological neonatal ICU: New approaches for neonates at high risk for brain injury and the South American centers experience

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Neonatology has experienced dramatically falls in mortality rates of critically ill neonates in the past few decades. However, many infants will develop severe neurological impairment. The big challenge consists in promoting survival with adequate quality of life. The implementation of a neurological neonatal ICU (Neuro-NICU) has been successfully described in several centers among the world. It consists in bringing to clinical practice new methodologies and a specific multidisciplinary approach in order to promote early diagnoses of brain injury and neuroprotection for infants at high risk. Four pillars are described: Neuro-monitoring (such as video aEEG/EEG and NIRS); neuroimaging (cranial ultrasound, tomography and MRI); neuro-assessment (close approach of neurology team and training neurological assessment tools for neonatologists and pediatricians in the NICU and after discharge and; neuroprotection (therapeutic hypothermia and strategies to minimize pain and stress for all infants). Newborns admitted to the Neuro-NICU include infants with hypoxic ischemic encephalopathy (HIE), seizures, extreme prematurity, large intra-ventricular hemorrhage, hydrocephalus, central nervous system infections and malformations (such as microcephaly), metabolic disease, and severe congenital heart diseases. Brain monitoring is specifically important in this population, since this is well described that 80 to 90 percent of seizures occurs with no clinical signs in the neonatal period. We have implemented and experienced the Neuro-NICU concept in five centers in Brazil, starting on 2015. Our Neuro-NICU has monitored over 300 infants. We found very high rates of seizures (47% of infants monitored, which 82% had subclinical seizures), and promoted cooling for over 80 infants with HIE.

Biography

Gabriel Fernando Todeschi Variane completed his graduation at Faculdade de Ciencias Medicas da Santa Casa de Sao Paulo. She completed his/her Pediatric training and neonatal fellowship at Santa Casa de Sao Paulo, Brazil. He/she was Visiting Observer at McGill University, Canada (2014), University of Cambridge, UK (2015) and Stanford University, USA (2016). He is Coordinator of the Neuro-NICU of Santa Casa de Sao Paulo, a very large and one of the most important medical schools in Brazil. He is a Neonatologist responsible for Group's Santa Joana Neuro-NICU.

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