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Should parenteral nutrition solutions for preterm infants be photoprotected?

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Due to the imbalance between a weak antioxidant system and a large exposure to oxidants, preterm infants are at risk of oxidant induced long term complications such as bronchopulmonary dysplasia. Parenteral nutrition solutions are contaminated with oxidants, and photoprotection decreases the infused oxidant load. Photoprotection prevents the PN induced lung histological alterations in newborn guinea pigs. Clinical benefit of photoprotection has been demonstrated on lipids tolerance, food tolerance, and blood pressure among girls. A small randomized trial found a decreased rate of bronchopulmonary when PN isphotoprotected. A large scale cohort study did not confirm this result. However in that study, photoprotection was partial. The Ambre study is a multicenter randomized trial with a total photoprotection in very low birth weight infants. Photoprotection did not decrease the rate of bronchopulmonary dysplasia or death in that population. Interestingly, the rate of oxidant related diseases was significantly lower in the subpopulation receiving all in one PN compared to those receiving lipids infused separately. With the data pooled from the different studies on total photoprotection, a metaanalysis was performed and has shown a 2 fold decrease in the mortality rate among photoprotected infants. Further studies are necessary to determine the optimal modality for lipid administration and photoprotection.

Biography

Sophie Laborie after a Medical Degree, residency in Paediatrics, and fellowship in Neonatology in Toulouse, France, spend 2 additional years of clinical and research training in Montreal, Canada. With a Master in Developmental Physiology (Paris, France), her research became focused on peroxidation of Parenteral Nutrition Solutions and especially on clinical consequences of this added oxidant stress in preterm infants. She is a member of the Centre de Recherche en Nutrition Humaine Rhône-Alpes.

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