C5-17: Long-Term Effects of Cycled Light and Near Darkness on Preterm Infants Neurodevelopmental Outcomes

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Abstract:
Introduction: The light environment in the neonatal intensive care unit has the potential to adversely effect the growth and development of premature infants. This study evaluated the appropriate time for instituting cycled light for preterm infants born at \(\leq 28\) weeks gestation.
Method(s): A longitudinal randomized two-group design evaluated the effects of early (28 weeks PMA) and late (36 weeks PMA) cycled light on long-term neurodevelopmental outcomes. One hundred and twenty one infants born at ≤ 28 weeks gestation were randomly assigned to receive cycled light at either 28 or 36 weeks postmenstrual age until discharge from the hospital. Prior to that time, all infants were maintained in continuous near darkness. Infants were followed after hospital discharge until two years corrected age. At 9 and 18 months of age the Amiel-Tison neurological examination was used to assess abnormalities in tone and the Bayley Scales of Infant Development assessed mental (MDI) and motor (PDI) abilities. Visual acuity was assessed with the preferential looking test at 12 and 24 months of age.

Results: At 18 months, over 61% of the 75 infants examined had normal neurological exams. There were no intervention group effects, but as anticipated presence of neurological risk evidenced by either PVL or a Grade III or IV IVH was related to an abnormal neurological exam. The late cycled light group had 4 infants with cerebral palsy at 9 months while the early cycled light group had none, however at 18 months there were 5 infants in each group with cerebral palsy. Like the neurological exam, there were no intervention effects on the MDI or PDI and neurological risk was significantly related to MDI and PDI scores at both 9 and 18 months chronological age. There were no intervention group differences in visual acuity at 12 months of age, but as would be anticipated, presence of neurological risk was significantly related to an abnormal visual acuity score.

Discussion & Conclusions: Day-night cycled light may promote health and development of preterm infants through promotion of biological rhythms and has no deleterious effects on neurodevelopment. In addition, keeping infants in continuous near darkness had no advantages over cycled light.

Abstract History:
This abstract has not been presented or accepted for presentation in whole or in part at the SNRS or other scientific meeting.

Financial Disclosure:
No, I (or a member of my immediate family) have not received something of value* from or own stock (or stock options) in a commercial company or institution related directly or indirectly to the subject of my presentation.

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