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The effect of early versus late lipid infusion in parenteral nutrition on the biochemical and cortical auditory evoked potential parameters in preterm neonates

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Background: As brain activity depends greatly on the functions provided by lipid membranes, dietary fat in early life can affect the developing nervous system. Despite the adoption of an early more aggressive parenteral nutrition approach with amino acid infusions still reluctance to the early use of intravenous lipids in neonates.

Aim: The aim of the study is to compare the effect of delayed versus early introduction of intravenous lipid in preterm on the biochemical parameters and on brain development by the cortical auditory evoked potential (CAEP) latency and amplitude.

Methods: This is comparative study included 49 neonates admitted at the Ain Shams University NICUs. Participants were divided into two groups: 26 in group of early lipid infusion and 23 in late lipid infusion. Demographic data and biochemical parameters were documented during the first two weeks of life. The CAEP was performed at age of six months. The latency and amplitude of P1 were recorded and compared between both groups.

Results: The results indicated that in the present work we found that group of early lipid infusion had reached their full oral intake earlier with shorter duration of parenteral nutrition and length of stay. They had better weight gain and significantly better glucose level control than group of late lipid infusion. There was no significant difference in the other chemical parameters between both groups expect for the higher incidence of cholestasis in the group of late lipid infusion. At six months of age, the group of early lipid infusion had significantly shorter latency and amplitude of P1 than the group of late lipid infusion.

Conclusion: Early effective nutrition positively affects feeding tolerance and weight gain and maturation of higher brain centers

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