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**The Safety and Efficacy of Enteral Omega-3 Fatty Acids Supplementation in the Resolution of Parenteral Nutrition Associated Cholestasis: A Case Control Study.**

**Abstract:**

**Objective:** To analyze safety, tolerance and efficacy of enteral omega-3 fatty acids (FAs) in the resolution of Parenteral Nutrition Associated Cholestasis (PNAC) and postnatal growth among preterm neonates.

**Study Design:** This is a single center retrospective case-control study of all neonates born less than 32 weeks of gestation and developed PNAC (Direct bilirubin>2mg/dl). Infants who received enteral omega-3 FAs supplementation (1g/Kg/d) served as cases and were compared with gestational age, gender and direct bilirubin level matched controls that did not receive enteral omega-3 FAs supplementation.

**Results:** A total of 48 infants were analyzed, 24 who received enteral omega-3 fatty acids were matched with 24 controls. The omega-3 FAs and control groups were similar in gestational age (weeks) and birth weight (gram). Overall there were no differences between the two groups in infants’ demographics or clinical characteristics including risk factors for the development of PNAC. Infants who received enteral omega-3 FAs had significantly fewer days of cholestasis (p=0.025) and a higher average daily weight gain (grams/day) (p=0.011) than their controls. In a linear regression analysis with days of cholestasis as the dependent variable and Ursodeoxycholic acid (UDCA) and Omega-3 FAs as independent variables, enteral omega-3 FAs remained associated with a shorter duration of cholestasis, p<0.001.

**Conclusion:** Enteral fish oil is inexpensive, safe & well tolerated in preterm neonates with no contraindications to enteral feeding. Enteral omega-3 FAs are easy to administer and help in rapid resolution of PNAC while promoting postnatal weight gain in preterm infants.