

**PARENTERAL NUTRITION ASSOCIATED CHOLESTASIS ASSOCIATED WITH SURGERY FOR IDIOPATHIC INTESTINAL PERFORATION AND NECROTIZING ENTEROCOLITIS**

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**Aim of the study:** Parenteral nutrition (PN) associated cholestasis (PNAC) is a serious complication in surgical premies. We assessed occurrence, risk factors and outcomes of PNAC in neonates who underwent surgery for necrotizing enterocolitis (NEC) or (IIP) idiopathic intestinal perforation in two Finnish neonatal centres.

**Patients and methods:** After ethical consent, hospital records of neonates who underwent surgery for NEC or IIP during 1986-2014 were reviewed. PNAC was defined as serum direct bilirubin > 2mg/dl (34mmol/l) any time after 14 days of PN. Predisposing factors were assessed with Multivariate Logistic Regression.

**Main results:** A total of 229 patients were included with NEC in 160(70%) and IIP in 69(30%), median birth weight was 880 (IQR 690-1100) grams. Median duration of PN was 25 (13 - 58) days in NEC and 27 (18 - 47) days in IIP,  $p = 0.56$ . Of 194 (84%) patients who survived after 14 days of PN 81(42%) developed PNAC, which lasted median 92 (47 - 150) days. Sixteen (20%) patients with PNAC history died, eleven (13%) of them had unresolved cholestasis. In all survivors PNAC resolved. In multivariate analysis blood culture positive sepsis episodes, HR = 1.8(95%CI = 1.3-2.7),  $p=0.002$ , proportional age-adjusted length of remaining small intestine <60%, HR = 2.2(95%CI = 1.1-4.4),  $p=0.03$  and birth weight under 880 grams, HR = 2.3(95%CI = 1.1-5.1),  $p = 0.046$  predicted PNAC. Overall survival was 79%. Conditional postoperative survival beyond 14 days was 83% in patients with PNAC and 84% in patients without PNAC ( $p = 0.94$ ). During 1986-2000 and 2001-14 respective incidence and survival of PNAC was 42% vs. 40% ( $p=0.88$ ) and 85% vs 78% ( $p=0.38$ ).

**Conclusion:** PNAC remains common complication among premies with NEC and IIP without added mortality beyond two weeks. PNAC was predicted by blood stream infections, extensive resection of small intestine and low birth weight.