Treatment Results After Ductal Closure in Extremely Low Gestational Age Infants

P. Koehne

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Factors Determining Outcome of Very Low Birth Weight Infants

Preterm neonates weighing below 1500g at birth (i.e., very low birth weight (VLBW) infants) account for 1.5% of all live born infants in the European Union and have a survival rate above 85%, yet the handicap rate has not changed during the past decade [1]. These VLBW infants may suffer from severe motor dysfunction in 5% and complex developmental impairment in 15% to 20% of survivors [2–4]. In addition, 15% to 36% of these children have been reported to suffer major neurodevelopmental handicaps at school age [5, 6]. By age of 8 years, 25% have repeated at least one grade in school, and >50% are receiving special educational services [7, 8]. It is well known that impaired neurodevelopment is associated with several risk factors like degree of immaturity, male gender, poor social status and the presence of intraventricular hemorrhage (IVH), periventricular leukomalacia (PVL), necrotizing enterocolitis (NEC), bronchopulmonary dysplasia (BPD), sepsis or microcephalus [9].

Failure of spontaneous ductal closure occurs in 25% of VLBW infants and may promote organ damage due to a volume overload of the heart and lungs, but a cerebral and intestinal perfusion deficit [10, 11]. Because the combined goals of perinatal intensive care are to promote survival and to prevent handicap in this high-risk neonatal population, it is critical to examine factors that may affect developmental outcome and to evaluate the potential contribution of an open duct to impaired development.

Impact of Patent Ductus Arteriosus Intervention for Outcome

Despite a large number of studies that have been performed to evaluate the effects of interventions for patent ductus arteriosus (PDA), the possible impact of a PDA and its treatment on the long-term outcome of these infants is not clear. This is in part attributable to the fact that all studies have allowed subsequent rescue PDA treatment in the control groups and to scarce availability of follow-up data.