

Management of PDA in RDS

In healthy term infants and preterm infants without RDS constriction and closure of the ductus arteriosus is complete within 48 hours of delivery in 90% of cases and in 100% by 96 hours.^{1,2} Closure is often delayed in preterm infants with RDS and is inversely related to gestational age. In one study 42% of infants < 1000g developed a significant PDA and this decreased to 7% in infants with a birth weight between 1500 and 1750g.³ Echocardiography studies have shown that in infants <1500g at birth requiring ventilation, a ductal diameter > 1.5mm in the first 30 hours usually requires treatment.⁴ Antenatal steroids protect against symptomatic PDA.⁵

The most widely used drug for closure of PDA is indomethacin. It has been used both prophylactically and for the treatment of symptomatic PDA. **Giving prophylactic indomethacin within 24 hours of birth has definite short term benefits including a significant decrease in the incidence of symptomatic PDA, the need for duct ligation and in the incidence of Grade 3 and 4 IVH, but there is no difference in mortality or in long term neurosensory impairment.⁶ Treatment also had no effect on respiratory outcomes or the incidence of necrotising enterocolitis.**

Owing to adverse effects of indomethacin, including transient renal impairment and decreased cerebral and gut blood flow, ibuprofen, which has a similar effect on ductal closure but with potentially fewer side effects, has been used both prophylactically and for the treatment of symptomatic PDAs. Ibuprofen reduces the incidence of PDA and has a similar efficacy to indomethacin.^{7,8} It causes less reduction in blood flow to the brain, gut and kidneys but there are concerns that it may increase respiratory morbidity. In one study 3 infants given ibuprofen developed pulmonary hypertension⁹ and when compared to indomethacin more infants receiving ibuprofen developed chronic lung disease.⁸ Consequently, **ibuprofen does not appear to confer any net benefits over indomethacin for the treatment of PDA and indomethacin should remain the drug of choice.** Several alternative dosage schedules are used varying from 0.2mg/Kg 12 hourly for 3 doses to 0.1mg/Kg 24 hourly for 6 doses. The prolonged course is associated with lower relapse rates and less biochemical disturbances¹⁰ and should be recommended although a loading dose of 0.2mg may be appropriate for infants with symptomatic PDAs. Infants with renal impairment should not be given indomethacin.

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