Propofol for procedural sedation/anaesthesia in neonates.

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Abstract

BACKGROUND:

Elective medical or surgical procedures are commonplace for neonates admitted to NICU. Agents such as opioids are commonly used for achieving sedation/analgesia/anaesthesia for such procedures; however, these agents are associated with adverse effects. Propofol is used widely in paediatric and adult populations for this purpose. The efficacy and safety of the use of propofol in neonates has not been defined.

OBJECTIVES:

To determine the efficacy and safety of propofol treatment compared to placebo or no treatment or alternate active agents in neonates undergoing sedation or anaesthesia for procedures. To conduct subgroup analyses according to method of propofol administration (bolus or continuous infusion), type of active control agent (neuromuscular blocking agents with or without the use of sedative, analgesics or anxiolytics), type of procedure (endotracheal intubation, eye examination, other procedure), and gestational age (preterm and term).

SEARCH STRATEGY:

We searched MEDLINE (1950 to September 30, 2010), EMBASE (1980 to September 30, 2010) and the Cochrane Central Register of Controlled Trials (CENTRAL, The Cochrane Library 2010, Issue 2) for eligible studies without language restriction. We searched reference lists of identified articles and abstracts submitted to Pediatric Academic Societies (2002 to 2009), and international trials registries for eligible articles.

SELECTION CRITERIA:

We included randomised or quasi-randomised controlled trials of propofol versus placebo, no treatment or other sedative/anaesthetic/analgesic agents in isolation or combination used in neonates for procedures.

DATA COLLECTION AND ANALYSIS:

We collected and analysed data in accordance with the standard methods of the Cochrane Neonatal Review Group.

MAIN RESULTS:

One open-label randomised controlled trial of 63 neonates was eligible for inclusion. Thirty-three neonates in the propofol group were compared to 30 infants in the morphine-atropine-suxamethonium group. There was no statistically significant difference in the number of infants who

required multiple intubation attempts (39% in the propofol group versus 57% in the morphine-atropine-suxamethonium group; RR 1.40, 95% CI 0.85 to 2.29). Times required to prepare medication, to complete the procedure and for recovery to previous clinical status were shorter in the propofol group. No difference in clinically significant side effects was observed; however, the number of events was small.

AUTHORS' CONCLUSIONS:

No practice recommendation can be made based on the available evidence regarding the use of propofol in neonates. Further research is needed on the pharmacokinetics of propofol in neonates and once a relatively safe dose is identified, randomised controlled trials assessing the safety and efficacy of propofol are needed.

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