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WILEY

[Intervention Review]

Prophylactic antibiotics to reduce morbidity and mortality in neonates with umbilical venous catheters

Garry DT Inglis¹, Mark W Davies¹

¹Grantley Stable Neonatal Unit, Royal Brisbane and Women's Hospital, Department of Paediatrics & Child Health, The University of Queensland, Brisbane, Australia

Contact: Garry DT Inglis, Grantley Stable Neonatal Unit, Royal Brisbane and Women's Hospital, Department of Paediatrics & Child Health, The University of Queensland, Butterfield Street, Herston, Brisbane, Queensland, 4029, Australia.
garry_inglis@health.qld.gov.au.

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ABSTRACT

Background

Umbilical venous catheters (UVCs) are often used in ill neonates. Infection related to the use of these catheters may cause significant morbidity and mortality. The use of prophylactic antibiotics has been advocated for newborns with umbilical venous catheters in order to reduce the risk of colonisation and acquired infection. Prophylactic antibiotics may be effective in preventing catheter-related blood stream infection, but may have the undesirable effect of promoting the emergence of resistant strains of micro-organisms.

Objectives

The primary objective was to assess whether prophylactic antibiotics in neonates with UVCs reduce mortality and morbidity. In separate comparisons, we planned to review two different policies regarding the prophylactic use of antibiotics in neonates with umbilical venous catheters: 1) Among neonates with UVCs, a policy of prophylactic antibiotics for the duration of catheterization (or other fixed duration of antibiotic treatment) versus placebo or no treatment; 2) Among neonates with UVCs who had been started on antibiotics at the time of catheterization, but whose initial cultures to rule out sepsis are negative, a policy of continuing versus discontinuing prophylactic antibiotics.

Search methods

We searched MEDLINE (January 1966 to April 2005), CINAHL (1982 to April 2005), the Cochrane Central Register of Controlled Trials (CENTRAL, The Cochrane Library, Issue 1, 2005). This search was updated in November 2010.

Selection criteria

Randomised controlled trials or quasi-randomised trials in which newborn infants with UVCs are randomised to receive prophylactic antibiotics versus placebo or no treatment.

Data collection and analysis

Two reviewers independently assessed trial quality.

Main results

One poor quality study met the criteria for inclusion in this review. Twenty-nine term infants, who had UVCs inserted specifically for transfusion procedures for hyperbilirubinaemia or polycythaemia, allocated non-randomly (alternate allocation) to treatment (n = 15) or control (n = 14) groups. Those in the treatment group received penicillin and gentamicin for three days. 5/15 infants given antibiotics

and 5/14 control infants having positive blood cultures three days after catheter insertion. All positive blood cultures were considered contaminated, due to lack of corroborating clinical and haematological evidence of infection. Therefore, no infants were identified with evidence of septicaemia.

Authors' conclusions

There is insufficient evidence from randomised trials to support or refute the use of prophylactic antibiotics when UVCs are inserted in newborn infants. There is no evidence to support or refute continuing antibiotics once initial cultures rule out infection in newborn infants with UVCs.

PLAIN LANGUAGE SUMMARY

Prophylactic antibiotics to reduce morbidity and mortality in neonates with umbilical venous catheters

There is insufficient evidence from randomised trials to either support or refute the routine use of preventive antibiotics in newborn babies with umbilical vein catheters. Sick newborn babies occasionally require the insertion of an umbilical vein catheter (a special tube) that goes into the vein in the umbilicus (belly button). This allows fluid and medicines to be given. Some people believe that antibiotics should be given to all babies with umbilical vein catheters in order to reduce the chance of infection occurring. However, antibiotics can have unwanted effects. The reviewers found insufficient evidence to either support or refute the routine use of antibiotics for all babies with umbilical vein catheters.