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[Intervention Review]

Fibreoptic phototherapy for neonatal jaundice

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ABSTRACT

Background

Phototherapy is used to treat newborn infants with hyperbilirubinaemia. Fibreoptic phototherapy is a new mode of phototherapy which is reported to lower serum bilirubin (SBR) while minimising disruption of normal infant care.

Objectives

To evaluate the efficacy of fibreoptic phototherapy.

Search methods

The standard search strategy of the Cochrane Collaboration was used including searches of the Cochrane Controlled Trials Register, MEDLINE, EMBASE and discussion with experts in the field.

Selection criteria

Randomised or quasi-randomised controlled trials evaluating the efficacy of fibreoptic phototherapy in the management of newborn infants with hyperbilirubinaemia.

Data collection and analysis

Thirty-one studies were identified of which 24 met inclusion criteria. They evaluated the efficacy of fibreoptic phototherapy in a number of different clinical situations and patient populations.

Main results

Fibreoptic phototherapy was more effective at lowering SBR than no treatment but less effective than conventional phototherapy (percentage change in SBR after 24 hours of treatment: WMD -10.7%, 95%CI -18.14, -3.26 and WMD 3.59%, 95%CI 1.27, 5.92 respectively). Fibreoptic phototherapy was equally as effective as conventional phototherapy in preterm infants and when two fibreoptic devices were used simultaneously (change in SBR after 24 hours of treatment: WMD 1.7%, 95%CI -2.65, 6.05 and change in SBR per day over whole treatment period: WMD 2.82%, 95%CI -1.84, 7.48 respectively). A combination of fibreoptic and conventional phototherapy was more effective than conventional phototherapy alone (duration of phototherapy: WMD -12.51 hr, 95%CI -16.00, -9.02, meta-analysis affected by heterogeneity). No conclusion can be made on the superiority of one fibreoptic device over another as the two studies comparing them (one favouring BiliBlanket, the other finding no difference) did not contain a common outcome measure.

Authors' conclusions

Fibreoptic phototherapy has a place in the management of neonatal hyperbilirubinaemia. It is probably a safe alternative to conventional phototherapy in term infants with physiological jaundice. No trials have been identified which support the widely-held view that fibreoptic devices interfere less with infant care or impact less on parent-child bonding.

PLAIN LANGUAGE SUMMARY**Fibreoptic phototherapy for neonatal jaundice**

A single fibreoptic phototherapy device is less effective at treating neonatal jaundice than conventional phototherapy, except in preterm infants in whom it is equally effective. Newborn infants often develop jaundice, which is concerning as unconjugated serum bilirubin can damage the developing brain. Since the 1960s, jaundice has been treated with phototherapy, for which the infants have to be naked in a crib with their eyes covered. Fibreoptic phototherapy is a new type of phototherapy in which the light is applied directly to the skin of the infant via optical fibres, enabling the infants to be nursed fully clothed near to their parents. This review has shown that fibreoptic phototherapy is less effective than conventional phototherapy, except in preterm infants in whom it is equally effective.