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Original Research

Critical overview of the management of neonatal jaundice in the UK

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Summary *Aim:* To determine the current management of early neonatal jaundice in the UK and to evaluate whether the current practices are evidence based.
Methods: A questionnaire survey was carried out among identified lead paediatricians of neonatal intensive care units.
Results: The survey found markedly differing practices for the recognition, investigation and treatment of neonatal jaundice. This applies particularly to confirmation of the clinical suspicion of jaundice; use of invasive and non-invasive technologies for diagnosis; preferred wavelength and intensity of light used for treatment; and whether birth weight, gestational age and postnatal age should influence treatment.
Conclusion: The study found a lack of consistency in the management of jaundiced infants in the UK. The evidence-based practice currently available does not appear to have been incorporated into treatment protocols.

Introduction

In 1994, the American Academy of Paediatrics (AAP) published guidelines for the management of neonatal hyperbilirubinaemia.[1] These were revised and republished in 2004.[2] This paper reports the results of a study designed to determine the management of jaundice in the UK, and to compare the treatment of this condition in the UK and the USA.

Paediatricians across the world recognize the importance of preventing acute bilirubin encephalopathy and its long-term neurodevelopmental consequences (kernicterus). In order to achieve this, neonatal units must have systematic and evidence-based guidelines so that infants at risk of severe hyperbilirubinaemia can be identified, investigated and followed-up appropriately. The AAP guidelines were introduced to ensure a uniform and consistent approach to the management of jaundiced infants in the USA. However, there are no

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national guidelines for the management of early neonatal jaundice in the UK. We rely on a visual inspection to assess the severity of jaundice, although studies have shown this to be unreliable.[3] There are many factors for severe hyperbilirubinaemia, including breastfeeding and early hospital discharge,[4] both of which are encouraged in maternity units throughout the UK. There is clear evidence that bilirubin encephalopathy still occurs.[5] A recent British Paediatric Surveillance Unit (BPSU) survey found that in a 9-month period, 61 infants were reported with severely elevated bilirubin levels ($>510\,\mu mol/l$).[6] The survey has been extended for a further year.

Methods

Lead paediatricians were identified using the Royal College of Paediatrics and Child Health database for all neonatal intensive care units (NICUs) in the UK. The identified consultant was sent a letter giving details of the study, a pretested multiple-choice questionnaire and a self-addressed envelope for its return. The Poole Hospital Research Ethics Committee approved the study.

The questionnaire (Appendix A) had 22 questions about the recognition, investigation and management of jaundice. Questions 1–5 enquired about which practitioners are involved in the initial diagnosis of jaundice, and whether the clinical recognition of jaundice is routinely confirmed by the use of invasive or non-invasive tests. In Questions 6–8, the respondent was asked if their unit has a written protocol for the management of jaundice, which practioners initiate treatment, and whether birth weight, gestational age or postnatal age influences the decision to treat. Questions 9–15 established whether a unit used overhead or fibre-optic phototherapy, and if there was a preference for the wavelength of light used. The questionnaire also enquired about the protocol for positioning the overhead light source, the measurement of light intensity and the procedure for replacing bulbs. The remaining questions addressed the frequency of exchange transfusions, whether any cases of kernicterus had been seen in the past 5 years, whether the unit had a policy for measuring brainstem auditory evoked responses (BAER) in jaundiced infants, and if home phototherapy could be provided. The units were also asked to indicate the maximum level of care that could be provided. Finally, the respondents were asked if they would like to be sent the results of the survey.

Results

Two hundred and thirty-one questionnaires were sent to hospitals in the UK. One hundred and sixty-three (71%) responses were returned. Three hospitals indicated that they had no NICU and were excluded from further analysis. Four of the respondents did not answer Questions 11–22. Twenty-one (13%) units reported that they can provide up to Level 1 care, 59 (38%) units can provide up to Level 2 care, and 71 (46%) units can provide Level 3 or 4 care. From the other five respondents, the maximum level of care that could be undertaken was unclear. One hundred and thirty-four (86%) respondents indicated that they would like to know the results of the survey.

Table 1 summarizes the results obtained from the questionnaire. A number of different practitioners were found to be involved in the initial management of jaundice. Junior doctors were most commonly involved in the diagnosis (100%) and initiation of treatment (91%). Corresponding figures for other groups are 73% and 73% for middle-grade doctors, 65% and 38% for consultants, 56% and 48% for nurse practioners, and 94% and 22% for midwives. The confirmation of jaundice differed markedly between units, with 66% of units routinely confirming the clinical suspicion of jaundice with investigations. Invasive investigation of jaundice was used exclusively in most units (87%), with 44% of units measuring serum bilirubin (SBR) on the NICU and 56% in the laboratory. There is no clear consensus regarding which non-invasive tests should be used. Following the diagnosis and confirmation of the SBR level, the majority of units (89%) have a written treatment policy but the clinical variables that determine the treatment levels vary enormously. Most units use a combination of fibre-optic and fluorescent phototherapy, the majority (56%) prefer blue light, and a small minority of units measure irradiance of the phototherapy units and irradiance at the level of the infant. Most units do not clearly define the distance between the infant and the phototherapy light unit.

Forty-seven (30%) units have not performed any exchange transfusions in the last year, 93 (60%) units have performed between one and two, 10 (6%) units have performed between three and five, and six units (4%) have performed more than five exchange transfusions. Nine (6%) units indicated that they had diagnosed kernicterus in the last 5 years.

One hundred and thirty-five (87%) units measured BAER, of which 119 (76%) had a specified policy.