Amiodarone and breast feeding

An infant was born at 33+2 weeks gestation by caesarean section after an in utero diagnosis of fetal ascesis and tachycardia. The mother had received treatment during pregnancy with flecainide, amiodarone, and propranolol. The amiodarone was prescribed initially at 200 mg three times a day and was reduced to twice a day after 11 days. The mother was keen to breast feed the baby. In previous reports of amiodarone treatment was for a maternal indication and hence breast feeding, amiodarone treatment was stopped at delivery. However, because of the long terminal half life of amiodarone (about 50 days), it could take several months for the level to fall. As one of the adverse effects of amiodarone is thyroid toxicity, the baby’s thyroid function was assessed and found to be normal. A decision was made to allow the mother to breast feed, and the baby was closely monitored.

Breast milk was sent for analysis to determine the amiodarone level on days 5, 11, and 25. It had increased on day 11 (2.1 mg/l) compared with day 5 (0.6 mg/l). This may be due to changes in composition of the milk. We do not know at what time of day the milk was expressed or whether the sample was taken at the beginning or the end of the feed. The fat content of the milk was likely to be greater after 11 days than after 5 days, which may affect the distribution of amiodarone. McKenna et al. described changes in amiodarone concentration in breast milk throughout the day. By 25 days, amiodarone was undetectable. Throughout this period the baby remained well and thyroid function was normal.

Although we would not recommend that breast feeding is necessarily safe for all babies exposed to amiodarone, this case illustrates that, in some circumstances, with close monitoring, breast feeding can be initiated.

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Reducing antibiotic use on the neonatal unit by improving communication of blood culture results: a completed audit cycle

It is common clinical practice to discontinue antibiotic treatment of asymptomatic babies if the blood cultures are negative at 48 hours. However, if blood culture results are only available during the normal working day, then antibiotic treatment of some babies may continue into the next working day. In our neonatal unit, blood culture results were routinely received from the microbiology laboratory via fax as a list every morning. Extra positive results would be telephoned through, if they became available, during the normal working day. Results could also be checked by the clinical staff telephoning the laboratory during “office hours”. This gave the potential for inadvertent prolongation of antibiotic courses for up to a day. In a previous study, McDonald et al. found this to be a common occurrence. It is of concern because unnecessary antibiotic use may contribute to antibiotic pressure within the neonatal unit and may encourage the selection of drug resistant organisms.

We performed two audits into this problem within our neonatal unit. Our audit standard on each occasion was that antibiotics should be stopped at 48 hours, if blood cultures were negative, unless a decision to continue was clearly documented in the case notes. Babies with negative blood cultures were identified from the microbiology database. Each episode was classified into one of four groups: (a) antibiotics not started; (b) antibiotics stopped within 48 hours; (c) antibiotics given for more than 48 hours deliberately; (d) antibiotics given for more than 48 hours unintentionally.

The results are summarised in table 1.

The first audit was conducted on 451 babies with negative blood cultures between January 1997 and December 1998. We were able to collect complete data from case notes and drug charts for 376 (83.4%) of these blood cultures. We found that the audit standard was not met in 144/376 (38.3%). The median (range) duration of antibiotic treatment for each baby was 60 (16.9–332) hours.

The blood culture analyser in use in our laboratory (BactAlert Microbial Detection System; Organon Teknika Corporation, Durham, North Carolina, USA) tests for bacterial growth every 10 minutes and communicates the blood culture status (positive or negative) to a computer. After our initial audit, we established a computer link between the blood culture analyser and the neonatal unit. This allows the clinical staff to check the status of any blood culture in the analyser in real time, 24 hours a day.

The second audit was performed on babies with negative blood cultures between May 2000 and August 2000. Two hundred negative blood cultures were identified. Complete data were available for 179/200 (89.5%). The audit standard was not met in only 20/179 (11.2%); p<0.0001 compared with the first audit. The median (range) duration of treatment was reduced to 48 (1–182) hours (p<0.0001). There was an overall reduction of two doses of antibiotic per baby (from a mean of 8.8 to 6.8 doses per baby).

Overall, we estimated that we gave 21 684 doses of antibiotics on the neonatal unit between January 1997 and December 1998. If the computer system had been in operation during this period, we estimate that we could have reduced this by 16.2% to 18.69. We think that this magnitude of reduction in antibiotic pressure on the neonatal unit is worth achieving.

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Table 1 Reduction in unintentional antibiotic use over 48 hours after introduction of real time availability of blood culture status by a computer link between the blood culture machine and our neonatal unit

<table>
<thead>
<tr>
<th>Results</th>
<th>Antibiotics started</th>
<th>Antibiotics stopped after &gt;48 h</th>
<th>Antibiotics continued for &gt;48 h deliberately</th>
<th>Antibiotics continued &gt;48 h unintentionally</th>
</tr>
</thead>
<tbody>
<tr>
<td>First audit</td>
<td>25 (6.6%)</td>
<td>132 (85.1%)</td>
<td>75 (19.9%)</td>
<td>144 (38.3%)</td>
</tr>
<tr>
<td>Second audit</td>
<td>15 (8.4%)</td>
<td>117 (65.4%)</td>
<td>27 (15.1%)</td>
<td>20 (11.2%)</td>
</tr>
</tbody>
</table>

References

3 Sanofi-Synthelabs. Summary of product characteristics, Cordarone X. Sanofi-Synthelabol, UK.
Swaddling and heat loss

The letter of Hawkes et al.1 raises the important issues of swaddling and temperature on admission to the neonatal unit. Besch et al.2 carried out a limited comparison of different swaddling materials and found a transparent plastic bag together with radiant heat to be effective in preventing heat loss in infants over 2 kg. Following a report in the literature,3 we have begun wrapping all preterm infants < 1000 g in a thin plastic wrap. The wrap is preheated on a radiant warmer and the infant is immediately placed (undried) on the plastic sheet, which is folded over the baby (but loosely) to enclose the torso and extremities from the neck down. The infant is left in the wrap until transported to the neonatal unit and the temperature has stabilised in a humidified environment. The median temperature of the 19 < 1000 g infants admitted since wrapping was commenced was 36.7°C on arrival to the nursery compared with 35.5°C for the previous 86 unwrapped infants (p = 0.002; using Mann-Whitney U test). There were no significant differences in birth weight, gestational age or Apgar scores between the groups.

Although our experience is in smaller preterm infants (who are more prone to hypothermia) our results are in keeping with the paediatric unit.3 We now plan to wrap all preterm infants < 1500 g.

The plastic wrap is likely to be more effective than towels because of reduction in evaporative heat loss and because it allows effective rewarming. Aluminum foil may reduce essential for preterm infants. Some form of radiant heat is needed in young infants: is 48 hrs adequate, 3

Table 1 Incidence of hypothermia and hyperthermia in control babies and babies wrapped in polythene bags (study group)

<table>
<thead>
<tr>
<th>Control group</th>
<th>Study group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>230</td>
</tr>
<tr>
<td>Gestation (weeks)</td>
<td>27.5 (23–29)</td>
</tr>
<tr>
<td>Weight (g)</td>
<td>1020 (400–1900)</td>
</tr>
<tr>
<td>Number &lt;35.5°C</td>
<td>96 (42)</td>
</tr>
<tr>
<td>Number &gt;37°C (0.4)</td>
<td>6 (12.5)</td>
</tr>
</tbody>
</table>

Values are either median (range) or number (%). CI, Confidence interval.

References
Umbilical granulomas: a randomised controlled trial

The Archimedes section has previously contained a brief section on the treatment of umbilical granulomas. We have now conducted a randomised controlled trial of the management of umbilical granulomas. The trial compared silver nitrate cautery with the use of alcoholic wipes at each nappy change (conservative management). The immature babies were divided into three groups: (1) immediate cauterisation (silver nitrate), (2) alcohol wipes and observation, and (3) observation only. This resulted in resolution in all remaining cases within a maximum of six days. In the absence of complications, the trial was terminated after 30 days.

Progressive ventricular dilatation (PVD) over the past 22 years

We read with interest the article of Murphy et al. (Pediatrics 1999; 145:141–6). As pointed out by Murphy et al., PVD sufficient to require intervention occurs almost exclusively in infants with grade 3 or 4 intraventricular haemorrhage (IVH). As expected, the very low birthweight infants with high grade IVH have a high mortality. Table 1 shows a comparison between the outcomes for grade 3–4 IVH at MMC during the 1980s and over the past five years (1997–2001 inclusive) and the data of Murphy et al. grouped in the same way. As noted, there is little difference over time or between studies. Overall mortality for grade 3–4 IVH was 33% (26/79) for Murphy et al., 33% (31/94) for MMC 1980s, 26% (24/91) for MMC 1997–2001 until grade 3–4 IVH can be eliminated, posthaemorrhagic hydrocephalus will continue to occur with high morbidity and mortality.

Table 1 Comparison between the outcomes for grade 3–4 intraventricular haemorrhage (IVH) in the three studies

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Murphy et al</th>
<th>MMC 1980s</th>
<th>MMC 1997–2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 3–4 IVH (% of all &lt;1500 g)</td>
<td>79% (71/91)</td>
<td>79% (71/91)</td>
<td>79% (71/91)</td>
</tr>
<tr>
<td>Death &lt; 14 days</td>
<td>18/29 (61%)</td>
<td>29/94 (30%)**</td>
<td>29/94 (30%)**</td>
</tr>
<tr>
<td>PVD requiring treatment</td>
<td>34/61 (55%)</td>
<td>24/65 (37%)</td>
<td>24/65 (37%)</td>
</tr>
<tr>
<td>VP shunt/live death (% of PVD treatment)</td>
<td>8/18 (44%)</td>
<td>12/3 (40%)</td>
<td>12/3 (40%)</td>
</tr>
</tbody>
</table>

*Rate for all infants <35 weeks.
**Rate for all deaths <30 weeks.

References

Do we need to assess the thyroid function in the infants of mothers with Hashimoto’s thyroiditis?

We read with interest the recent comprehensive review of neonatal thyroid disorders, which gave evidence-based answers to many important questions. The authors recommended that all babies born to mothers with Hashimoto’s thyroiditis be screened at 10 days to 2 weeks and a thyroid stimulation hormone test taken because infants may develop transient hypothyroidism or, very rarely, hyperthyroidism.

As paediatricians, in a hospital with a paediatric endocrine caseload similar to some tertiary centres and a subregional neonatal intensive care unit, we detected deliveries of 6000 per annum, we think that the potential benefits of this practice are difficult to justify. We do understand that such practice will help in identifying babies who may develop transient congenital hypothyroidism caused by maternal thyrotropin receptor blocking antibodies. However, the incidence of this form of hypothyroidism has been estimated to be 1 in 180 000 normal infants (~2% of congenital hypothyroidism) and the majority of them will have raised thyroid stimulation hormone levels that can be detected by the current neonatal screening.

Based on a simple calculation, in a unit of our size only one baby will be detected every 30 years. We feel that there would be major disadvantages if we are to adopt the author’s recommendation. Firstly, an extra hospital visit for babies and parents; secondly the need to bleed many healthy infants; and finally the potential for confusion and unnecessary anxiety. Until objective evidence emerges about the significance of subtle thyroid dysfunction in early life we feel that the current screening programme should not be extended.

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References