Hypothemia in the Early Neonatal Period

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Abstract

**Background:** Hypothemia in neonates is a common problem and is associated with increased morbidity and mortality. Prevention of hypothemia is therefore an essential aspect of neonatal care especially in the immediate neonatal period.

**Aim:** To evaluate the efficacy of thermal care of the neonate in the labour ward at St Luke's Hospital, Malta.

**Method:** Retrospective study analysing the temperature on admission to the nursery from the labour ward. A consecutive sample of 754 neonates admitted during 2002 was studied.

**Results:** The proportion of babies admitted with normal body temperature (36.5-37.5°C) was 25.5%. The rest were mildly (36.0-36.5°C) (42.2%) or moderately (<36.0°C) (32.2%) hypothemic. Significantly less normothermia was evident in winter births (19.6%) than in summer births (38.1%) (Chi squared=26.5, p<0.0001).

**Implications:** The results indicate the need for an improvement in thermal support in the labour ward.

Keywords

Hypothemia, newborn, Malta.

**Introduction**

Thermal care of the newborn infant should ensure that body temperature is maintained within normal limits, i.e. 36.5-37.5°C. Newborns are prone to become hypothemic because of their limited ability to generate and conserve heat. Immediately after birth, the wet newborn starts losing heat and unless active measures are taken, hypothemia develops rapidly1. Hypothemia is common and occurs in all environments, including places with warm climates2.

Moreover, hypothemia is an important cause of morbidity. The baby becomes lethargic, hypotonic and sucks poorly. Cold stress results in profound metabolic disturbances including hypoxia, acidosis and hypoglycaemia3.

Hypothemia in neonates is defined as a core temperature below 36.5°C; 36-36.5°C is mild hypothemia (cold stress); 32-36°C is moderate hypothemia; <32°C is severe hypothemia4.

In this study, we evaluate thermal care of the newborn by looking at the proportion of neonates admitted with hypothemia to the nursery from the labour ward.

**Methods**

This retrospective study analyses the temperature of healthy term babies on admission to the nursery from the labour ward at St Luke's Hospital, Malta. The temperature of the infant on admission to the nursery reflects the efficacy of thermal care from the time of birth, the period in the labour ward, and the transfer to the nursery.

Following a WHO publication on thermal care4, we adapted the following index as a suitable indicator of thermal care during the first few hours after birth:

\[
\text{Number of infants admitted with a temperature of } >36.5°C \\
\text{Total number of admissions}
\]

A secondary objective of this study was to compare any possible effect on the incidence of hypothemia between the summer and winter months. It is known that the environmental
Discussion

The very high incidence of hypothermia (74.5%) clearly indicates an inadequacy in the thermal care of neonates in the crucial hours after birth. Typically, a period of two hours elapses between delivery and admission to the nursery. Only a quarter of all infants admitted to the nursery had a normal body temperature.

A similar study in a UK hospital involving 69 infants showed that 14% had a temperature of less than 36°C on the postnatal ward. In our study, 32% had a temperature of less than 36°C on admission to the nursery.

Temperature measurements in the nursery are taken rectally. This practice is considered hazardous, but it correlates better with core temperature than the axillary site. The American Academy of Pediatrics recommends the axillary site for temperature measurement, mainly because of the risk of rectal perforation. The use of mercury-in-glass thermometers has been banned in most centres and the electronic thermometer, which is accurate, safe and measures the temperature quickly, should substitute it. The SI unit for temperature, the Celsius, should be adopted as in most European countries. If the temperature is <36.5°C, active measurements should be taken to re-warm the baby.

The problem of hypothermia is worse in January and February and this suggests that the indoor temperature is lower during winter. The delivery rooms are warmed by radiant

Table 1. The number of infants classified under various temperature groups.

<table>
<thead>
<tr>
<th></th>
<th>Moderate hypothermia &lt;36°C</th>
<th>Mild hypothermia 36.5-36°C</th>
<th>Hypothermia (total) &lt;36.5°C</th>
<th>Normal body temperature &gt;36.5°C</th>
<th>Total number of infants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan/Feb</td>
<td>181 (38.1%)</td>
<td>201 (42.3%)</td>
<td>382 (80.4%)</td>
<td>93 (19.6%)</td>
<td>475</td>
</tr>
<tr>
<td>Jul/Aug</td>
<td>45 (19.9%)</td>
<td>95 (42.0%)</td>
<td>140 (61.9%)</td>
<td>86 (38.1%)</td>
<td>226</td>
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<tr>
<td>Totals</td>
<td>226 (32.2%)</td>
<td>296 (42.2%)</td>
<td>522 (74.5%)</td>
<td>179 (25.5%)</td>
<td>701</td>
</tr>
</tbody>
</table>
Table 2: Guidelines for thermal care in the labour ward, adapted from a WHO publication.

1. The temperature of the delivery room should be at least 25°C and there should be no draughts.
2. Immediately dry the newborn after birth with a warm towel, and remove wet blankets.
3. Place a cap on the baby’s head.
4. Place in skin-to-skin contact with mother and cover with a warm blanket; or bundle in warm blankets, and give the baby to mother to hold; or dress in warm clothes, and place in a pre-warmed closed incubator (temperature 33°C).
5. Initiate breast-feeding within one hour of birth.
6. Bathing and weighing should be postponed. The baby should be bathed at least 6 hours after birth, and preferably on the second day of life, and only if the baby is healthy and has normal body temperature.
7. During transportation, use skin-to-skin contact with mother; or dress and wrap the baby in blankets.

Given the high incidence of hypothermia in the first hours after birth, it is recommended that, following discussions with the midwifery staff, there is an immediate implementation of the WHO recommendations for thermal protection in the labour ward (Table 2).

A future audit is indicated to reassess thermal care in the labour ward after the implementation of these measures.

Acknowledgements

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References