

CASE REPORT

Scald injury from the Guthrie test: should the heel be warmed?

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A 6 day old boy sustained scalds to his right foot from application of a “warm nappy” to increase blood flow to facilitate heel pricking for a routine Guthrie test. It is proposed that active warming of the heel in isolation is not necessary in heel blood sampling.

CASE REPORT

A 6 day old male baby was admitted to the burns unit at Booth Hall Children’s Hospital with scalds to his right foot sustained while waiting to have a routine Guthrie test.

The midwife opted to use the “hot water in the nappy” technique to facilitate blood sampling from a heel prick. According to the midwife, this was a “standard” technique whereby a nappy soaked with warm water was wrapped around the heel for two to five minutes to cause vasodilatation, before the heel prick was performed. Soon after application of the “warm nappy”, the baby screamed. When the midwife removed the nappy, she found blisters on the heel. The baby’s mother promptly placed the right heel under cold running water, and the baby was then transferred to Booth Hall burns unit for further management.

On examination, the baby was found to have sustained mid-dermal scalds on the right foot and ankle totalling 1.5% total body surface area. The wound healed with conservative management. However, the child has a residual dyspigmented, slightly raised scar at the site of the healed scald injury (fig 1). When last examined, six months after the injury, fortunately there were no functional problems.

DISCUSSION

The Guthrie test (newborn screening for phenylketonuria and thyroid function test) is performed when a child is 6 days old. Capillary blood sampling in neonates is generally through a heel prick. The heel is reasonably vascular and has relatively few nerve endings. The technique is simple, but is often performed incorrectly and may result in haemolysis^{1,2} pain,^{3,4} and other complications.⁵

Prewarming the heel to increase blood flow is often recommended as part of heel preparation.^{6,7} This raises an important question: should the heel be warmed before capillary blood sampling? Several studies have shown no benefit of warming the heel before capillary blood sampling.^{8,9} The volume of blood, collection time, crying time, and repeat procedures have been shown to be no different between children who had their heel warmed and those who did not.

We undertook a telephone discussion with some senior midwives in the region, and the general consensus was that heel warming before blood sampling was not necessary. They felt that keeping the child in a warm room with clothes on for a few minutes was usually sufficient. However, if this were unsuccessful, then a visit on another day would be a better



Figure 1 Right foot and ankle showing dyspigmented, raised scar resulting from scald injury. Permission for publication of this figure has been obtained from the parents.

option. Interestingly, we had designed a telephone questionnaire to find out practices in the community, but abandoned the idea as a memorandum was circulated to all the midwives in the region after this incident. We felt the response would be biased.

We propose that active warming of the heel in isolation is not important in heel blood sampling. More emphasis should be directed towards other factors, such as sampling devices and technique.^{10–12} The “hot water in nappy” technique should certainly be condemned.

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Permission for publication of fig 1 has been obtained from the parents.

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