CASE REPORT

Sclerema neonatorum after therapeutic whole-body hypothermia

Susanne Navarini-Meury, Jacques Schneider, Christoph Bühner

Arch Dis Child Fetal Neonatal Ed 2007;92:F307. doi: 10.1136/adc.2006.103978

Hypothermia is being studied as a neuroprotective therapy after asphyxia. This report is about a term newborn with severe asphyxia who underwent systemic hypothermia (34.5°C) for 72 h. He survived without apparent brain damage but developed sclerema on his back, in the area in contact with the cooling mattress. The sclerema resolved without scarring after three months.

Neurological outcome of severely asphyxiated newborn infants may be improved by therapeutic hypothermia.^{1,2} We report on a term newborn with severe asphyxia (Apgar 0/1/3, umbilical artery pH 6.88), subgaleal haematoma and Erb's palsy secondary to shoulder dystocia. The baby underwent cardiopulmonary resuscitation which included endotracheal intubation and chest compressions. He had encephalopathy (Sarnat stage II) with lethargy, muscular hypotonia, mild distal flexion and seizures, which were treated with phenobarbital and topiramate. Therapeutic whole-body hypothermia was induced 3 h after birth with a rectal temperature of 34.5°C for 72 h, using a water-filled mattress

(Anamed, Bad Ems, Germany). No skin abnormalities were noted during the first 2 weeks of life. Diffusion-weighted magnetic resonance imaging at 3 days of life showed apparently normal diffusion coefficients in the whole brain, and electroencephalographic findings normalised by 10 days of life.

At 3 weeks of life, subcutaneous induration and swelling was observed in the whole of the baby's back, stretching from the neck to the lowest ribs. The fixed skin formed a shell-like structure. The baby's movements were not severely restricted but seemed to cause him discomfort and pain. The affected region had been in touch with the water-filled mattress used for cooling. Ultrasonography showed subcutaneous thickening without calcifications (fig 1) and normal perfusion, as measured by power Doppler. The sclerema resolved in the subsequent two months. The baby boy was discharged and showed normal neurodevelopment at 3 months' follow-up examination. His Erb's palsy had mostly resolved.

Sclerema neonatorum is a now rare disease, precipitated by prematurity, asphyxia and hypothermia.^{3,4} Two of these risk factors had been present in our patient, although the hypothermia was medically induced and probably effective with respect to cerebral protection. In the whole-body hypothermia study conducted by the National Institute of Child Health and Human Development Neonatal Research Network,¹ one of 102 infants exposed to systemic hypothermia at 33.5°C developed sclerema. As in the case reported here, this was transient. We propose that parents and caregivers of infants undergoing therapeutic hypothermia should be made aware of this side effect, but this should not deter them from consenting to hypothermia in asphyxiated infants because of its transient nature.

Authors' affiliations

Susanne Navarini-Meury, Jacques Schneider, Christoph Bühner, University Children's Hospital, Basel, Switzerland

Competing interests: None.

Correspondence to: Dr S Navarini-Meury, Universitäts-Kinderspital beider Basel, CH-4005 Basel; susannemeury@gmx.ch

Accepted 5 February 2007

REFERENCES

- Shankaran S, Laptook AR, Ehrenkranz RA, et al. Whole-body hypothermia for neonates with hypoxic-ischemic encephalopathy. *N Engl J Med* 2005;353:1574–84.
- Gluckman PD, Wyatt JS, Azzopardi D, et al. Selective head cooling with mild systemic hypothermia after neonatal encephalopathy: multicentre randomised trial. *Lancet* 2005;365:663–70.
- Fretzin DF, Arias AM. Sclerema neonatorum and subcutaneous fat necrosis of the newborn. *Pediatr Dermatol* 1987;4:112–22.
- Battin M, Harding J, Gunn A. Sclerema neonatorum following hypothermia. *J Paediatr Child Health* 2002;38:533–4.

Figure 1 Longitudinal dorsal view of paramedial soft tissue of the patient (top) and a healthy infant of the same age (bottom). The sclerema spans about 0.9 cm between the skin and the muscles.