A full-term infant had asphyxia at 1 day of age. His weight was 3500 g; his length, 49 cm; and his head circumference, 36 cm (all parameters were between the 50th and 75th percentiles). Apgar scores were 1 and 5 at 1 minute and 5 minutes, respectively.

A tracheal intubation was performed because of asphyxia, bradycardia, and poor respiratory effort. The patient was treated with 12 hours of mechanical ventilation followed by continuous positive airway pressure ventilation for the next 3 days. Neonatal hypoglycemia was treated with intravenous dextrose, and metabolic acidosis with intravenous bicarbonate. The first day, seizures occurred lasting approximately 5 minutes. Dystonia, opisthotonos, and irritability were observed during the first week.

Brain magnetic resonance imaging indicated frontal regions of encephalomalacia and blood surrounding the left cerebellar hemisphere. On day 2, pitting edema appeared on the back, and there were dusky, reddish-purple nodular lesions on the neck and back. The overlying skin was taut with violaceous coloration, and the lesions were sharply circumscribed with an irregular surface. The affected area of the back extended from the neck to the thoracolumbar junction (Figure 1).

Magnetic resonance imaging of the lower cervical region and upper thorax was performed (Figure 2). The white blood cell count was 40000/µL during the first week, then decreased to 15000/µL. Polymorphonuclear leukocytes consistently made up 50% to 60% of the total number of white blood cells, and no nonsegmented polymorphonuclear cells were present. The erythrocyte sedimentation rate was 95 mm/h, and C-reactive protein reached a level of 9.3 mg/dL. Blood cultures and serologies were negative for toxoplasmosis, other agents, rubella, cytomegalovirus, and herpes simplex. An ultrasonographic evaluation showed no structural abnormalities of the kidneys or urinary tract. The skin lesions continued to enlarge for 2 weeks. When the patient was discharged at 2 months of age, the lesions had decreased to 60% of the former size.

Figure 1.

Figure 2.
Denouement and Discussion

Subcutaneous Fat Necrosis of the Newborn

Figure 1. Photograph of the back showing the large, sharply circumscribed lesion.

Figure 2. Magnetic resonance imaging scan of the thorax. A, Sagittal T2-weighted image shows swelling of the subcutaneous fat on the back with the presence of hyperintense streaks. B, Sagittal T1-weighted image shows a hypointense signal with homogeneous poor enhancement after a contrast injection (C).

Subcutaneous fat necrosis (SFN) in the newborn is a rare, transient inflammatory disorder of adipose tissue attributed to perinatal stress such as birth trauma, asphyxia, meconium aspiration, or exposure to cold.1-3 Prolonged hypothermic cardiac surgery, maternal diabetes, and preeclampsia are associated with SFN.2,3 The disease is characterized by indurated, non-suppurative, erythematous or violaceous mobile subcutaneous masses with taut overlying skin. The face, trunk, buttocks, and proximal extremities are the typical locations of lesions.4 Subcutaneous fat necrosis usually develops within the first several weeks of life, most frequently between the 5th and 10th days, and is usually self-limited. Hypercalcemia may be associated with SFN and represents the most serious complication; undetected hypercalcemia may have a fatal outcome. Other complications include nephrocalcinosis and nephrolithiasis.5 The pathogenesis of SFN is poorly understood, and in many affected infants no provocative factors have been identified. The disorder does not occur in all infants who are at risk.

The presence of growing masses in the soft tissues of the neonate should be carefully investigated. Differential diagnoses include rhabdomyosarcoma, aggressive fibromatosis, hemangioma, sclerema neonatorum, and fibrous lesions, including infantile myofibromatosis.6,7

Magnetic resonance imaging characteristics of SFN are typical. Criteria include abnormal signal intensity of the subcutaneous fat, hypointensity on T1-weighted images, moderate hypointensity on T2-weighted images with poor T1-weighted postcontrast enhancement, and no mass effect.

Magnetic resonance imaging allows the diagnosis of SFN without performing more invasive procedures such as biopsy of the lesion or surgical repair. Parents may be reassured about the probability of complete spontaneous recovery from SFN.

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