

SUBCUTANEOUS FAT NECROSIS OF THE NEWBORN : REPORT OF A CASE

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Gazi Medical Journal 2001; 12: 199-201

SUMMARY : *Subcutaneous fat necrosis of the newborn (SCFN) is an uncommon disorder which usually occurs in the first weeks of life following a complicated delivery. We report here the clinical and histologic features of SCFN in a six weeks old female infant presenting with multiple nodules and diffuse hardening of the skin which had developed a few days after an experience of intrapartum hypoxia and dystocic delivery. Hypercalcemia, the commonest complication of this disease, did not develop in this patient and the skin nodules resolved spontaneously in a few weeks.*

Key Words: *Subcutaneous Fat Necrosis, Newborn.*

INTRODUCTION

Subcutaneous fat necrosis of the newborn (SCFN) is a rare, transient disorder of adipose tissue that occurs primarily in the newborn infants after trauma inflicted during the obstetric procedure or asphyxia at birth. It consists of multiple indurate, erythematous dusky-red nodules and plaques in the skin. The frequency with which hypercalcemia develops as a complication is uncertain. The condition is self limited and spontaneous resolution in a few weeks is usual (1-3). We report here clinical and histologic features of SCFN in a 6 weeks old female infant presenting with multiple nodules and hardening of the skin.

CASE REPORT

A 6-week-old female infant was admitted to the hospital because of multiple nodules in the skin. On admission, her weight, length and head

circumference were in the 75th percentile. Multiple indurated tan-colored nodules and plaques with diffuse hardening of the skin were noted on her back, shoulders, upper arms and buttocks. Otherwise, her vital signs and physical examination were normal. Laboratory tests including complete blood count, calcium, phosphorous, alkaline phosphatase, albumin, blood urea nitrogen, creatinine, triglycerides and cholesterol levels and liver function tests were all within normal limits.

In the medical history, her parents mentioned that she was born at term weighing 4.5 kg by vacuum extraction because of developing intrapartum asphyxia. She was successfully resuscitated immediately after birth and recovered within two hours. Clinical examination and blood analysis were found normal and she was discharged on the second day.

Multiple erythematous plaques on her back, shoulders, upper arms and buttocks were noticed on the seventh day by her mother. However, because her intellectual level was low, she had waited for five weeks to refer to the hospital, as the lesions changed consequently to a tan color with hardening of the skin. Histopathologic examination of the lesions on admission confirmed the diagnosis of SCFN with a pattern of lobular panniculitis consisting of needle-shaped clefts within histiocytes, multinucleated

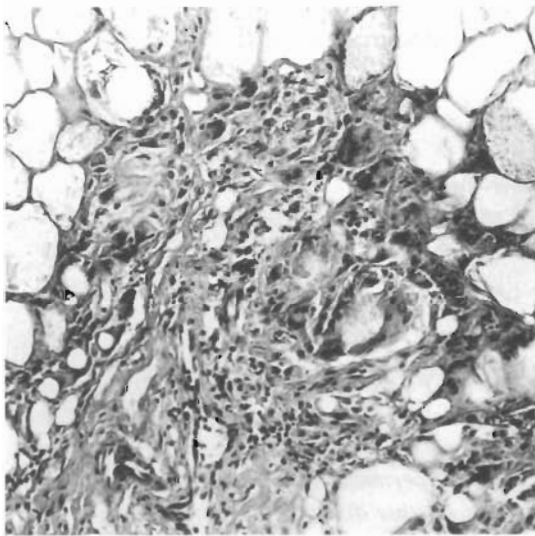


Fig. 1: Granulomatous fat necrosis consisting of lymphohistiocytic infiltration and multinucleated giant cells. Hematoxylin-Eosin x100.

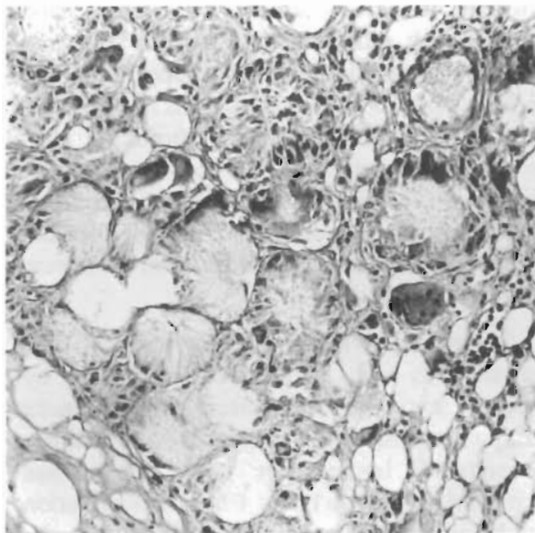


Fig. 2: Needle-shaped clefts arranged radially within multinucleated histiocytes and rarely within adipocytes. Hematoxylin-Eosin x100.

giant cells and granulomatous fat necrosis (Fig. 1 and 2).

The indurated nodules remained for about one week of the hospitalization period and resolved spontaneously within two months in the follow-up. The subsequent physical examination and laboratory tests were all normal.

DISCUSSION

SCFN is a benign, rare disorder in which nodules appear on the skin within several days after birth and remain for several weeks to months. The lesions may be single or multiple, poorly circumscribed nodules or plaques that are initially firm with a dusky reddish-purple hue. They are most often located in areas in which a fat pad is present such as buttocks, back, arms and thighs (1, 3). The resolution occurs over a period of weeks to months with diffuse hardening of the skin (1, 4). The nodules in the present case appeared in similar localizations, however looked tan colored on the examination. While her parents mentioned that these lesions were initially erythematous, we think that the lesions represented the late course of the disease. Because we did not see the initial lesions and the lesions on admission looked tan color, we were unable to take any demonstrative photographs.

Although the cause of this disorder is obscure and little is known of the pathophysiology of SCFN, the condition seems to be triggered by stressful events such as perinatal and postnatal asphyxia and hypothermia (3). One hypothesis is that SCFN may result from a peripheral oversupply of saturated fatty acids, in combination with exposure of skin adipocytes to lower temperatures and thus may be associated with aberrant plasma lipid and lipoprotein values (5). In contrast, plasma lipid levels were normal in the present case. Hypothermia of the skin, as occurs during cardiac surgery, may be directly associated with SCFN (6). Moreover, systemic hypoxia also gives rise to hypothermia of the skin as a result of peripheral vasoconstriction and is the commonest finding associated with SCFN (7). In the past history of the present case, hypoxia was well-documented.

Although serum calcium levels of this patient were within normal range on admission and follow-up period, because the baby was not seen initially, it could be speculated that she could

have had a transient or asymptomatic hypercalcemia during the initial period. Likewise, it has been suggested that the most serious association with this disorder is hypercalcemia (2, 4, 8, 9). While the patients with hypercalcemia may be asymptomatic, the incidence and course have not been well-documented. However, the patients should be followed closely for the development of hypercalcemia for the first 6 weeks of life (1). The mobilization of calcium from the necrosed subcutis together with the action of some hormones may cause hypercalcemia (3). Current treatment of patients with SCFN-related hypercalcemia includes hydration, furosemide, glucocorticoids and diet low in calcium and vitamin D (9).

The histopathologic features are diagnostic of SCFN. As confirmed in the present case by the histological examination of the lesions, light microscopy reveals granulomatous inflammation in zones of fat necrosis, needle-shaped clefts arranged radially within histiocytes scattered throughout lobules, and lymphocytes scattered among histiocytes, many of them multinucleate (10). In the histopathologic differential diagnosis, poststeroid panniculitis and sclerema neonatorum were ruled out by the absence of steroid administration and presence of needle-shaped clefts mostly within histiocytes, rarely within adipocytes (7).

To conclude, we present here a case of SCFN which is a rare and mostly self limited disease. The disease occurs in newborn infants usually after hypoxia at birth and is manifested by multiple dusky-red nodules. Histopathologic examination of a skin biopsy is usually confirmative. The cause and mechanism are both unknown. Infants with this condition should be carefully monitored for hypercalcemia.

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