Calcification and Loss of Subcutaneous Tissue Following Trauma and Hypothermia

Calcification of areas of fat necrosis in the neonate is a well-recognized condition. Loss of subcutaneous tissue after resorption of the calcium salts appears to be an unusual complication and I have been unable to find a previously recorded case.

Case Report

This baby was admitted to hospital at the age of 7 weeks with a diagnosis of bronchopneumonia. Examination confirmed the diagnosis, but on handling the limbs, hard plaque-like masses were palpable as though the child had a 'coat of armour' within the tissues of the limbs. X-rays confirmed extensive calcification in the subcutaneous tissues of all four limbs (Fig. 1a and b).

The early history was indeed dramatic. The mother was an unmarried 15-year-old girl and though living at home, her parents were unaware that she was pregnant. One winter night she went into labour and, unattended, delivered her baby. He began to cry and in her panic she opened her first floor window and flung him out into the garden. Fortunately that night there was thick snow on the ground, which must have softened his fall. The child lay in the snow for about 2 hours and on being found was admitted to the nearest maternity hospital, where he was thought to be dead, but was fortunately put into an incubator. His temperature was not recorded, being below that of the low reading rectal thermometer. However, he responded to warmth and his weight 12 hours after admission was 2864 g.
Skull x-ray revealed a fissured fracture of the occipital bone.

Two weeks later he was discharged to a nursery where he subsequently developed bronchopneumonia, resulting in his admission to this hospital. The bronchopneumonia responded rapidly to treatment. Serum calcium was normal and blood Wassermann reaction negative. Vitamin D had not been given in excessive dosage. It was considered that trauma and hypothermia after birth had probably resulted in extensive fat necrosis and calcification.

At 5 months, x-rays showed that the abnormal calcification had disappeared except for a little in the region of the knee joints.

When he was 10 months old, it was apparent, clinically and radiologically, that there was atrophy of the subcutaneous tissues below the right knee joint (Fig. 2). At 14 months the circumference of the right leg was 1.9 cm less than the left leg. By 19 months the difference was only 0.95 cm. This difference persisted for some years and gradually diminished, and at 8 years the legs were equal in diameter and normal in appearance.

**Discussion**

Hypothermia is an uncommon cause of fat necrosis.
necrosis. Collins, Stahlman, and Scott (1953) described this complication following hypothermia for cardiac surgery. The body temperature of a 5-month-old infant was reduced to 28 °C (82.5 °F) for 2-3 hours; 2 weeks later fat necrosis appeared in the abdominal wall, trunk, buttocks, and thighs. Blake et al. (1955) described a similar case in a 20-month male infant following hypothermia for cardiac surgery for tetralogy of Fallot. Extensive areas of fat necrosis in the trunk and buttocks occurred 16 days later.

Duhn, Schoen, and Siu (1968) described 2 infants who developed extensive fat necrosis with calcification after induced hypothermia for the treatment of asphyxia after birth. This treatment was based on the belief, held by some at that time, that hypothermia would reduce the oxygen requirements of the brain. Hypothermia was induced by immersion of the body below the neck in ice water baths. One infant was immersed for 28 minutes and the other for 5 minutes; both were removed when breathing started. The rectal temperature of the first infant was 32.2 °C (90 °F) 45 minutes after birth, and of the second infant 33.4 °C (92 °F) 1½ hours after birth. During the first few weeks of life both infants developed extensive fat necrosis with calcification, involving the subcutaneous tissue below the head. X-rays confirmed the extensive calcification and a biopsy was done in the second case giving added confirmation. There was no evidence of a disturbance in calcium metabolism. In both cases the lesions gradually resolved before the age of 6 months, without any atrophy of the subcutaneous fat being seen.

Fat necrosis due to hypothermia appears to be a complication peculiar to infants, probably due to the low level of oleic acid in the adipose tissue of newborn infants compared with the adult (King et al., 1971). Oleic acid is a long chained fatty acid and has a much lower melting point (13 °C) than palmitic acid (62.85 °C), so that the low oleic acid content of adipose tissue of the newborn makes it more prone to solidify as a result of hypothermia.

In this case hypothermia and trauma could have been responsible for extensive fat necrosis with subsequent calcification. The subsequent atrophy of the subcutaneous tissue in the right leg is of interest and this may be related to the severity of the initial trauma. The ultimate recovery was however complete.

Summary
A case of calcification of subcutaneous tissue following trauma and hypothermia is described.

Resorption of calcium salts was followed by atrophy of the subcutaneous tissues of the leg. Full recovery occurred after several years.

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REFERENCES

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Congenital Euplis: Its Natural History

The congenital euplis was first described in 1871 since when reports of these lesions have appeared at infrequent intervals so that by 1955 Campbell noted that only 29 examples had been published. He did observe that with an increased awareness of the condition, its occurrence may be less rare than was previously supposed. This observation is borne out by the fact that now, 100 years after the original description, some 70 such cases have been described. The same author has remarked however that no idea of the natural history of the congenital euplis can be obtained from reported series. Two further reports are presented here, and from these we can make some observations on the natural behaviour of the congenital euplis.

Case Reports

Case 1. (This has been briefly described by Jones in 1965.) Boy born in 1959, with a large pedunculated tumour attached to the lower alveolar ridge as seen in Fig. 1. At operation under local anaesthetic this was removed 3 hours after birth. Examination of the mouth at this stage revealed a second tumour. This was present in the upper right area of the mouth, was very much smaller than the main mass, and had a sessile attachment to the gum. On inspection and palpation it was otherwise similar to the larger tumour. This was not removed. On follow-up check 13 months later this lesion had resolved and tooth eruption was proceeding normally.