The Journal of Laryngology and Otology
November 1986. Vol. **100.** pp. 1329–1332

Haxthausen's disease
Cold panniculitis in children

by

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Introduction

In 1941 Haxthausen described a condition occurring in small children who had been exposed to cold. All the children had been outdoors for several hours in temperatures below freezing and developed, within a few days, firm infiltrative nodules in the subcutaneous tissues of the cheeks and in one case under the chin. Later a few similar reports were seen in paediatric and dermatological journals (Rotman, 1966; Lowe, 1968; Rajkumar *et al.*, 1976). As a child with a firm painless lump in its cheek is as likely to show up in the otologist's office as in the paediatrician's or the dermatologist's, it is of importance to further describe this condition.

Case report

Case 1. A 14-week-old girl with normal development, breastfed and weighing 7.0 kg. with round cheeks, was sleeping outdoors well covered in her pram for 2–3 hours every day through the winter 1983. One night the parents noticed a red spot over the left cheek. The temperature outside was around −5°C that week. The next day, a subcutaneous firm infiltration was palpable in the cheek. It grew to about the size of an almond within 4 days, while the red spot turned more purplish. The spot was most easily seen in artificial light and less visible outdoors. The skin was completely intact with no signs of epithelial damage. The child was not sick and had a normal temperature, and the tumour was not painful.

One week later the girl was examined by specialists in paediatrics, dermatology and otology. She was tentatively put on antibiotics and a biopsy was planned. Five days later, when the clinical condition was unchanged, a diagnosis of Haxthausen's disease was made by a consulting specialist in paediatric dermatology and the medication was withdrawn. With no other treatment than protection from cold, the nodule disappeared within 3 months (when the winter was over). The next winter the girl did not sleep outdoors any longer, but playing in the snow was enough to cause a similar but smaller lesion in her right cheek. In this case the nodule had gone after 6 weeks. No permanent residues are palpable or visible since then.

Case 2. A six-month-old boy, younger brother to case 1, also breastfed and weighing 9.0 kg. with very round cheeks, was walked for two hours in a pram, New Year's Day 1985, very well covered, laying on his stomach sleeping with the right cheek up. The outdoor temperature was −7°C. The same evening a bright red spot was seen on the right cheek and during the next few days a painless firm nodule the size of a walnut developed. The red spot turned purple and was seen as long as the tumour was palpable, i.e. 2 months (Fig. 1).

Six weeks after the exposure to cold, when the lesion was regressing, an ice-cube test was performed to verify the diagnosis: An ice-cube was pressed against the volar side of the forearm for 2 minutes. After a 'normal' ischaemic-hyperaemic reaction in the skin minutes after the ice exposure, nothing special was noticed until 48 hours later when a purple spot began to show where the ice had been in contact with the skin. After another 3 days a subcutaneous nodule was clearly palpable. Eight days after the ice exposure a punch biopsy was taken. The histological picture was a panniculitis in the subcutaneous fat at the junction with the dermis which showed slight oedema. The fat cells were necrotic and there was an infiltration of lymphocytes, histiocytes and a few eosinophilic granulocytes (Fig. 2). This induced lesion also disappeared after some weeks.

Comments

Cold panniculitis is a special condition of the

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FIG. 1
The purple spot clearly visible on the right cheek 1 month after the exposure to cold.

subcutaneous fat (Lever and Schaumburg-Lever, 1983), which is to be distinguished from the much more common 'frostbite' involving epidermis and dermis and the blood vessels therein. Smaller children are more sensitive to cold than older children. According to Leméz (1928), it is possible to induce a nodule in the subcutis of a newborn baby in 100 per cent of the cases by the application of an ice-cube to the skin for 50 s. At six months of age only 40 per cent of the children react in that way and just a few at nine months of age.

A condition similar to Haxthausen's disease has been described as 'popsicle panniculitis' (Epstein and Oren, 1970; Sembrot, 1970; Rajkumar *et al.*, 1976). Children who have held a popsicle or an ice-cube in their mouth for some minutes have developed the same kind of indolent nodule in the cheek and also the purple spot on the *outside* of the skin. It seems as if the popsicle panniculitis heals faster than the lesions of Haxthausen's disease, probably because of the shorter time of exposure to cold.

In connection with heart surgery in infants, when hypothermia has been used, subcutaneous fat necerosis in the buttocks has also been described (Collins *et al.*, 1953).

Except for the lesions in the face and a positive ice-cube test, no pathological coldagglutinins or cryoglobulins or other abnormalities have been found in any of the published cases (Haxthausen, 1941; Rotman, 1966; Lowe, 1968; Epstein and Oren, 1970; Rajkumar *et al.*, 1976). In spite of the high sensitivity to cold among small babies the condition is very little known in Scandinavian countries, although most babies there sleep outdoors every day, even in very cold weather. The lesion may be overlooked or more likely classified as 'frostbite'.

The two cases presented belong to the same family, which leads one to suspect that a genetic component may exist. Both children, however, had unusually round cheeks, in contrast to an older sister who had slept outdoors as a baby without any problems. The higher sensitivity to the physical trauma of cold in smaller babies is thought to be due to a higher content of saturated fatty acids at that age than later on in life. Saturated fat solidifies at a higher temperature than unsaturated fat (Hirsch, 1965). Adams *et al.* (1954) demonstrated that the susceptibility to cold depends upon the unsaturated fat content of the diet. Perhaps the children who develop cold panniculitis, in addition to the exposure to cold, have a diet richer in saturated fat than others. This could also explain the round cheeks. Because the two children in the present report were both breastfed at the time they developed the panniculitis and their weights were above 90th percentile, it might have been interesting to examine the fat composition of the breastmilk, but this was not done.

Cold panniculitis in the face is only known among children, but another similar lesion has been described as occurring in the upper lateral aspects of the thighs in young women devoted to horse-riding (Beacham *et al.*, 1980). Riding in uninsulated tight pants for several hours per day through the winter may cause panniculitis in the dermal-subcutaneous fat. However, these nodules are typically tender, in contrast to Haxthausen's disease. That these young ladies do not get lesions in their unprotected cheeks, could indicate that the fat composition varies not only with age but also within the body.

Conclusion

Although Haxthausen's disease is a benign condition which heals without any residue, it is a good idea to recommend that parents of round-cheeked babies should not let their children sleep outdoors with unprotected cheeks in cold weather. It is also important that the doctor be aware of Haxthausen's

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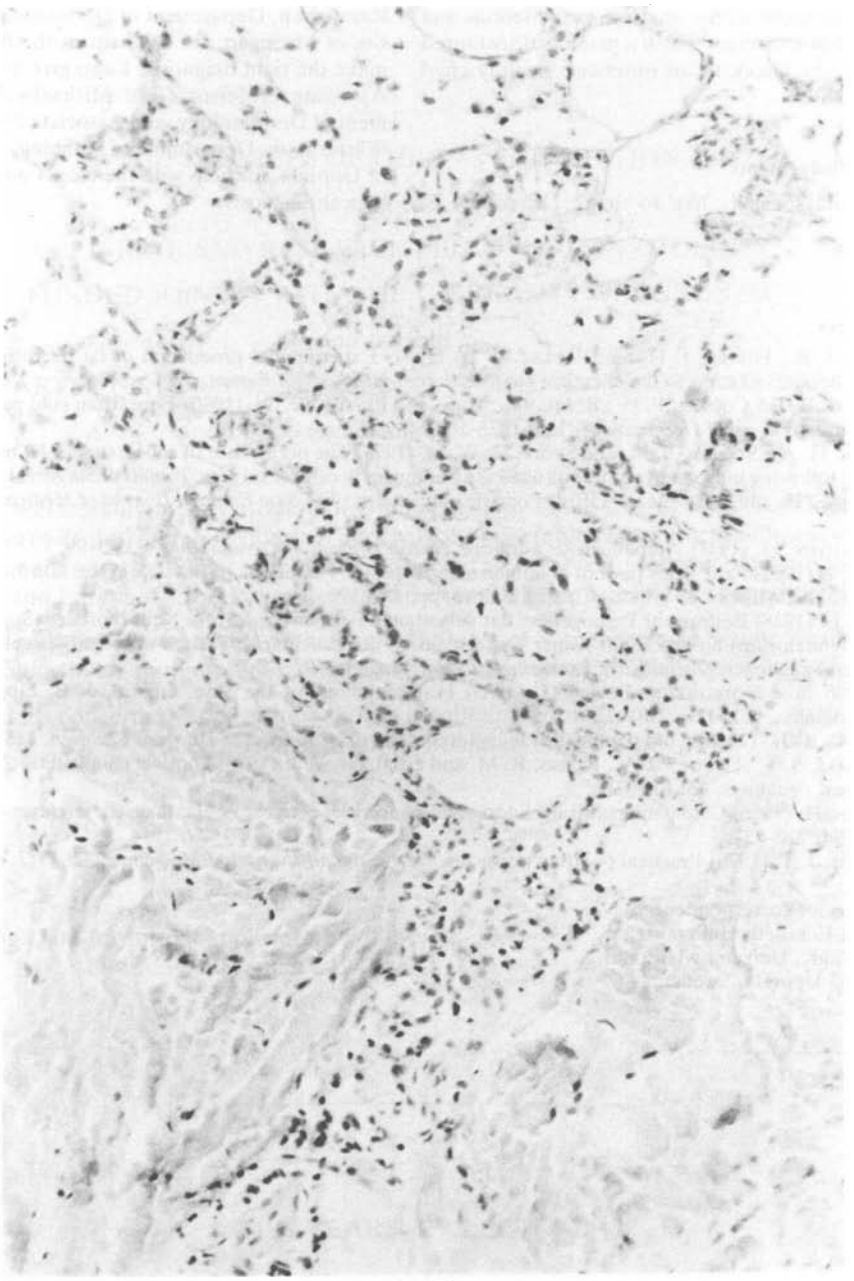


FIG. 2

Biopsy section from induced lesion showing panniculitis (haematoxylin and eosin, ×200).

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disease to avoid all the anxiety, examinations and attempts at treatment which a painless discoloured lump in the cheek of an otherwise healthy child might cause.

Acknowledgements

I would specially like to thank Dr. James E. Rasmussen, Department of Dermatology, University of Michigan, for his help in the first case to make the right diagnosis. I also give my thanks to Associate Professor Gerd Michaelsson, Department of Dermatology, and Associate Professor Per Wästermark, Department of Pathology, University of Uppsala, for help with the biopsy and the histological diagnosis.

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