Deprivation hands and feet

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SUMMARY A survey of preschool children in three inner city day nurseries serving deprived areas found 13 children with pink oedematous hands and feet—'deprivation hands and feet'. The children and their families were compared with similar children in the nurseries. Growth and development were poor compared with accepted norms, but not notably different from controls. The families of the affected children were exceptional in being at a considerable social disadvantage. Other children in the families of these children also showed the sign.

In both hospital and community work we have noticed that some children from deprived families have persistently pink hands and feet. Typically, the extremities are deep pink (sometimes with a bluish tinge) and mildly oedematous. The skin is often shiny, and feels cold to the touch, though in a warm room they can become excessively warm as the skin blood vessels dilate. In extreme cases the condition may extend to the knees and face, and the skin desquamates. The children often have other signs of deprivation. The sign is commoner and more severe in cold weather, but persists even in a warm room in the worst cases. The sign seems most common in children between 18 months and 5 years and resolves as they get older. For convenience we have labelled this 'deprivation hands and feet'. In the published reports on childhood deprivation, the sign is only occasionally mentioned, and then only in passing.^{1 2}

We have most commonly encountered this sign in inner city social services day nurseries. Therefore the study was based in Nottingham city nurseries which serve areas of considerable social deprivation. Children often receive places in these nurseries because of their poor social circumstances, and frequently show inadequate growth and development.³

Methods

Two of the authors (AN and CP) visited three day nurseries which they were not familiar with during the spring and summer of 1983, and inspected all of the Caucasian children for the sign (it is hard to

distinguish the sign in black and Asian children). Physically handicapped children were also excluded. Sixty seven children were inspected, and 13 were found to show the sign to varying degrees. Thirteen controls matched for age and race were chosen from other day nursery children. A number of social details of the children's families were obtained from their health visitors, who were unaware whether they were cases or controls. Details were: family composition, parental employment, whether the child or a sibling had ever been in care, if the child had ever been on the non-accidental injury register, whether a social worker or probation officer was actively involved with the family, and the number of changes of address since the birth of the child. The health visitors rated the families on a scale of 0 (poor) to 6 (good) for physical home conditions and maternal emotional warmth towards the child. Details were obtained of the children's birthweights, completion of first year's immunisations, and any hospital admissions. The health visitors were later asked if any of the case children's siblings had shown deprivation hands and feet. All children were measured and weighed and given a Denver developmental screening test by SG.

Results

The cases consisted of nine boys and four girls, the controls three boys and ten girls. Mean ages were 3 years (range 2.1 to 4.6) and 3.1 years (range 2.3 to 4.4) respectively. Other results are shown in Tables 1 and 2. Compared with accepted standards,⁴ the growth results were poor for both cases and controls. Cases were shorter and heavier than controls,

Table 1 *Growth parameters in children with deprivation hands and feet and controls (values, mean (SD))*

	Cases	Control
Birthweight (kg)	3.04 (0.59)	3.26 (0.42)
Height for age (SD scores)	-1.16 (1.03)†	-0.64 (1.13)*
Weight for age (SD scores)	-0.11 (1.31)	-0.7 (0.99)‡
Weight for height (SD scores)	+0.23 (0.99)	-0.076 (0.731)

SD scores=Standard deviation scores=Growth parameter - median
1 SD

Comparison by matched pairs *t* test with day nursery controls **P*<0.05.
Comparison with accepted norms⁴ by *t* test †*P*<0.01; ‡*P*<0.05.

Table 2 Children's development, medical, and social history

	Cases	Controls
Denver test (fail/total)	4/13	5/13
Hospital admissions (total)	24	9
Hospital admissions for failure to thrive	6	0
Completed 1st year immunisations	2/13	11/13
Health visitors' ratings (mean)		
Physical conditions*	2.1	4.0
Maternal warmth*	2.2	4.2
Single parent family	5/13	8/13
Either parent employed	0/13	6/13
Changes of address since birth (mean)	2.2	2.5
Social worker or probation officer involved	13/13	8/13
Child or siblings ever been in care	7/13	0/13
Child ever on NAI register	6/13	1/13

* On scale 0-6, low=poor, high=good, NAI=non-accidental injury.

however, though the difference only reached statistical significance for height. Indeed the cases were reminiscent in their measurement and appearance of deprivation dwarfism.¹ Developmental test results were poor for both groups. Cases had had many more hospital admissions, especially for failure to thrive, and immunisations had rarely been completed.

In many ways the case families were very different. The health visitors considered home conditions and maternal warmth to be worse. Fewer cases were in single parent families, but none had a parent in employment. A social worker or probation officer was involved with every family, more of the children or their siblings had been in care, and nearly half had been on the non-accidental injury register at some time. The health visitors considered they had observed deprivation hands and feet in eight of 10 siblings.

Discussion

While the growth and development of the children with deprivation hands and feet were poor, they were no worse than for the other nursery children. This justified using nursery controls, as otherwise we could have been simply identifying deficiencies common to many day nursery children. The differences between the families were striking, however. Case families were deeply locked into cycles of deprivation, and it was probably significant that older siblings had also shown the sign. Indeed, the nursery matrons commented that these children were from the families that caused them greatest concern. It was surprising that there had not been more changes of address. The matrons suggested that this was because the families had descended to the worst housing conditions and were unlikely to be rehoused.

Lack of food or parental warmth, inadequate housing, under-clothing, physical inactivity of the children, and bed wetting have all been suggested to us as causes of the sign. Certainly, thermal regulation may be important as the sign is similar to cold injury and more common during the winter. Under-feeding would also be a very likely candidate. The nursery matrons suspect these children are under fed. They are notably lethargic, perhaps as an adaptation to a poor diet. There are some common features between deprivation hands and feet and mild Pink disease. Blood mercury concentrations determined in the five most badly affected children were normal.

The sign is not necessarily a short term response. Two of the worst affected children were later taken into foster care. After eight months both had put on weight to the point of obesity, and one had moved from the 25th to the 50th height centile and lost her deprivation hands and feet. Her sister's growth had not accelerated, however, and she retained the sign despite adequate clothing, warmth, and being very happy in her new home.

We have found this sign in some physically handicapped children in normal families. Perhaps for them the sign is due to poor vasomotor control.⁵ Also, while the children with deprivation hands and feet were from particularly deprived families, many other children in the nurseries also had special social needs and were doing no better in their growth and development. Hence we feel that this sign is a specific, readily identifiable, but not sensitive marker for deprivation in the non-physically handicapped child.

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