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Changing patterns of iron deficiency anaemia in the second year of life

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Iron deficiency anaemia at 14 months and 2 years of age in inner city practice.

	No of children (n=150)
Anaemic at 14 months	43
Anaemic at 2 years	13
Not anaemic at 2 years	30
Risk of anaemia	30% (30/43)
Not anaemic at 14 months	107
Anaemic at 2 years	23
Not anaemic at 2 years	84
Risk of anaemia	21% (23/107)

Iron deficiency is the commonest cause of anaemia in children in the United Kingdom. It is associated with psychomotor delay that is reported to be reversible with iron treatment,^{1,2} although there may be later cognitive deficit.³ There has been considerable discussion about introducing screening for iron deficiency anaemia into routine child health surveillance.⁴ Screening is acceptable to parents and a high uptake is achievable,⁵ but the natural course of the disease remains poorly understood.

We examined the relation between iron deficiency anaemia at 14 months of age and the risk of anaemia at 2 years in a cohort of children attending a deprived inner city practice.

Subjects, methods, and results

A total of 301 (92%) 14 month old children attending for immunisation had a blood sample taken by thumb prick for haemoglobin estimation; their parents were given dietary advice.⁶ Of these, 76 (25%) were classified as being anaemic (haemoglobin concentration <110 g/l); they were treated with iron supplements, and invited to attend for retesting after treatment. All of the 65 who reattended showed a rise in haemoglobin concentration. Electrophoresis was carried out in those at risk. By 2 years of age, 237 (79%) children were still registered with the practice and were sent an appointment for repeat estimation of haemoglobin concentration. Of these, 150 (63%) attended. Ethnic group and weight were recorded and parents were asked whether their child was difficult to feed.

To investigate possible bias, the mean haemoglobin concentration at 14 months in those who were eligible for screening and who reattended (115 g/l) was compared with that in the 87 children who did not reattend (115 g/l) and with that in the 64 children who were no longer registered with the practice (119 g/l).

Thirty six (24%) children had a haemoglobin concentration <110 g/l at 2 years of age. There was little correlation between haemoglobin concentration at 14 months and at 2 years of age ($r=0.2$ (95% confidence interval 0.0 to 0.3)). There was no significant difference in the risk of anaemia at 2 years between those who were and were not anaemic at 14 months (risk ratio 1.4 (0.9 to 2.2) (table)).

Of 48 children who were described as difficult to feed, 21 were anaemic at 2 years of age (risk ratio 3.5 (1.9 to 6.7)). Of 24 children whose weight was below the 10th centile at 2 years, 11 were anaemic (risk ratio 2.2 (1.3 to 3.8)). The risk of being anaemic at 2 years if either of these factors was present was 38.7% (24/62) compared with 10.8% (8/74) in those in whom neither factor was present.

Fifty six children (37%) were of Afro-Caribbean origin and six (4%) were of Asian (Indian subcontinent) origin; the remainder were of white European origin. There was no significant difference in the prevalence of iron deficiency anaemia between ethnic groups.

Comment

In this inner city practice a quarter of 14 month and 2 year old children were anaemic. Nearly one third of the children who had been treated for iron deficiency anaemia at 14 months and in whom a rise in haemoglobin concentration had been seen were anaemic at 2 years of age. Over one fifth of the children whose haemoglobin concentration was in the normal range at 14 months were anaemic at 2 years of age.

There was a strong association between an increased risk of iron deficiency anaemia and a weight below the 10th centile or being described as difficult to feed. In this population, asking whether a child fell into one of these groups would identify children with a haemoglobin concentration of less than 110 g/l with a sensitivity of 75% and a specificity of 64%.

Iron deficiency anaemia is a common problem with potentially serious consequences. This study suggests that screening for it at 14 months of age is an ineffective method of identifying those at risk of adverse consequences in early childhood. This has obvious implications for proposals to institute population based screening. The appropriate preventive strategy remains unclear, but population based interventions may prove to be a more fruitful approach.

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