Severe Anemia in Malawian Children

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hypertension, left ventricular function, age, diabetes and history of previous stroke.[1] Following this, the patient's potential benefit from antiplatelet therapy and OAC should be estimated. Finally, and perhaps most tricky, the patient's risk of major bleeding should be assessed. Future research should try to develop more robust methods to predict the individual risk of stroke and major bleeding.

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Severe anaemia in sub-Saharan Africa

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TITLE Severe anemia in Malawian children

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Kanthu n'kavumbu, kavumbula mende pachisa
(Something is revealed, stirring up the rat in the nest) – Malawian (Chewa) idiom

SUMMARY

In one of the most comprehensive studies published to date of the aetiology of severe anaemia in the developing world, Calis et al. compare the prevalence of factors associated with severe anaemia in 382 children aged between six and 60 months of age with haemoglobin (Hb) <5.0 g/dL, and 759 apparently healthy matched controls. Subjects were recruited from an urban teaching hospital in Malawi and a rural district hospital. Two groups of control patients, one from the community and one consisting of surgical outpatients, were studied.

The control group data illustrate the public health importance of anaemia and its causes, and the difficulty of inferring causation from uncontrolled studies in populations with widespread poor health. Even among the community control groups, the mean Hb was 9.9g/dL. Deficiencies of iron, vitamin B12, vitamin A and generalised malnutrition as suggested by wasting were common in the control group as a whole (69.4%, 15.6%, 65.6% and 6.2% respectively); folate deficiency was not found. Infective causes were also very prevalent (malaria [*Plasmodium falciparum*] 42.8%, human immunodeficiency virus [HIV] 6%, hookworm 1.9%, Epstein-Barr virus [EBV] 18%). Haemoglobinopathies were rare (Hb S/S 1.0%; β thalassaemia and α0 thalassaemias have not been described in Malawi), although the prevalence of glucose-6-phosphate dehydrogenase (G6PD) deficiency was 9%.

Factors positively associated with severe anaemia in a multivariate analysis were deficiencies of vitamins A and B12, infection with HIV, EBV, *P. falciparum* and hookworm, bacteraemia (most commonly with non-typhi Salmonella species), and G6PD deficiency. Low maternal education levels were also associated with severe anaemia. Counterintuitively, iron deficiency was less common among children with severe anaemia than in the control group, especially for children from an urban area. The authors note an inverse association between bacteraemia and iron deficiency and suggest that a protective role of iron deficiency against bacteraemia may have a net effect of protecting against severe anaemia.

A subsequent follow-up of patients in the study[1] showed an in-hospital mortality of 6.4% and an 18-month all-cause mortality of 12.6%. This compares with a 1.4% all-cause mortality for the community controls (which is distressingly high in itself). HIV infection was the strongest predictor of subsequent mortality in patients with severe anaemia.

OPINION

One of the first observations that strikes any doctor working in the developing world is the frequency and severity of anaemia both in hospital patients and the community. Based on World Health Organization criteria

(Hb <11.0 g/dL), it is thought that about two thirds of people in Africa and south Asia are anaemic.[2] In hospital practice, severe anaemia (variably defined as Hb <4.0–6.0 g/dL) is a great contributor to workload; 12–19% of children admitted to hospital in sub-Saharan Africa are severely anaemic[3,4] and anaemia is thought to contribute to approximately 10% of adult inpatient deaths.[5]

This study highlights the multifactorial nature of severe anaemia and explains why the results of intervention trials targeting specific factors, which have shown efficacy in reducing community levels of anaemia,[6,7] cannot be generalised to patients with severe anaemia. What is desperately needed in resource-poor environments where investigation facilities are extremely limited (in Malawi even a full blood count is available only in referral centres) is an evidence base on which to base empirical treatment strategies. While the results are not necessarily generalisable to other environments, this study is a major contribution to such an evidence base and suggests many options for the management of patients with severe anaemia which may not have been widely appreciated, in particular the importance of bacterial sepsis and the need for caution in treating patients with suspected sepsis with iron. While such a broad-based study will be difficult to replicate in other environments, outcome studies of empirical treatment protocols incorporating treatment of the most important associations of severe anaemia described in this study are feasible and would not need large numbers to provide a sounder evidence base for treatment.

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Microalbuminuria in childhood diabetes

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TITLE Risk of microalbuminuria and progression to macroalbuminuria in a cohort with childhood onset type 1 diabetes: prospective observational study

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SUMMARY

The Oxford Regional Prospective Study (ORPS) was initiated in 1986 to examine the development of early nephropathy in a large cohort of children aged less than 16 years followed from diagnosis with type 1 diabetes. The most recent paper from this study presents data from more than 500 participants with a mean age of 8.8 years at diagnosis and followed up for an average of 9.8 years. Children and young people had annual assessments of diabetes control using glycated haemoglobin, yearly lipid and blood pressure measurement and collection of three early morning urine samples for their albumin/creatinine ratio.

The results suggest that the cumulative prevalence of microalbuminuria (MA) in this group of young people was 26.7% after 10 years of diabetes and 50.7% after 19 years of diabetes, with a mean age of onset of MA of 16.1 years. Microalbuminuria was more common in girls, but the only predictor of the development of MA was long-term diabetes control as assessed by glycated haemoglobin