(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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JOURNAL *BMJ* 2008; 336:697–701.

DECLARATION OF INTERESTS No conflict of interests declared.

***Published online* September 2009**

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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

concentrations. Those children diagnosed before the age of five years had a delayed interval to onset of MA compared with those diagnosed later: 8.8 years for those under five, compared with 7.7 years in 5–11 year olds and 5.5 years if diagnosed over the age of 11 years.

Forty-eight per cent of participants had persistent MA (every subsequent assessment), 13% had intermittent MA and 39% had transient MA (no recurrence after a positive result during the course of the study). The cumulative prevalence of progression from micro- to macroalbuminuria was 13.9%; progression occurred at a mean age of 18.9 years and duration of diabetes was 10.0 years. Again, diabetes control and both persistent and intermittent MA were the main risk factors for macroalbuminuria.

OPINION

The discovery of insulin in the early twentieth century must have seemed like a modern-world miracle: people who would previously have died were restored to near normality with just an (admittedly unpleasant) injection of subcutaneous pancreatic extract. The prospect of long-lasting health became a possibility, but it quickly became clear that the treatment of type 1 diabetes was far from easy and that people with diabetes were at risk of both life-threatening and life-compromising acute and long-term complications. Our understanding of the development of these complications has increased considerably, but within the field of childhood diabetes there are still a number of unanswered questions as to the evolution of these complications during childhood and how best to manage any problems that arise.

This study by Amin et al. is one of the largest paediatric studies to have observed the early development of nephropathy in a group of young people with type 1 diabetes: it involved more than 500 participants with a mean period of observation of almost 10 years and a dropout rate of less than 10%. It is important in that it has highlighted a worryingly high prevalence of MA in this cohort after a relatively short period of time, with a risk profile that seems to be worse than in comparable groups of adults. Another recent study, this time from Australia, found that 36% of 11–18 year olds developed retinopathy after a median duration of diabetes of only 4.9 years;[1] further evidence of the burden of illness that can accompany type 1 diabetes in the young.

Although many patients are likely to present with MA as young adults to physicians, there are a small number that will be identified within paediatric practice. The group in this study were otherwise healthy with no significant problems of hypertension or dyslipidaemia, which may explain why the only modifiable risk factor was glycaemic control. National audit data from England and Wales highlight clearly that control is often very poor throughout childhood: less than 18% of children and young people taking part in the 2007/2008 audit had a glycosylated haemoglobin less than the target of 7.5% recommended by the National Institute for Health and Clinical Excellence.[2,3] Audit data also suggest that only a third of young people have their urine checked for albumin excretion annually and two thirds have their blood pressure measured, which means that a number of these young people will go unidentified and unmonitored.[2]

The other worrying aspect, which does seem to be a particular problem in the care of adolescents, is the possibility that teenagers can grow out of their complications, as witnessed by the fact that almost 40% of the group in this study appear to have transient MA but with the possibility of further recurrence over time. Recent data from a group of obese adolescents also suggested that markers of metabolic complications, such as insulin resistance and dyslipidaemia, could be transient over a two-year period.[4] These findings suggest that the metabolic turmoil of adolescence could lead to a short-term exacerbation of complications which then settle in early adult life and which could reappear later, in effect highlighting an at-risk group. The implications for the management of these possibly 'transient' complications during adolescence, as well as for the design of randomised interventional studies, are significant.

So what do these data mean in practice? Firstly, the problem of MA does appear to be significantly more common than anticipated. We still have no evidence for any effective treatment intervention other than improving glycaemic control, which we know can be problematic in this group of young people who often find it difficult to be engaged with their disease management and who take risks with their health and well-being. It still does seem sensible that those with MA and raised blood pressure are treated with anti-hypertensives, although there are no good data in the paediatric field to support the notion that this would delay progression to macroalbuminuria.

Furthermore we do need to improve our surveillance. Adolescents in our local service are not keen on providing samples of urine when they attend clinic; the prospect of collecting a urine sample in a small pot in a public toilet is not appealing to many. Our diabetes specialist nurses are trying to collect urine samples when they visit young people at home for their nursing annual review, but we are yet to see if this improves sample provision. Finally, we still need to look at alternative ways of connecting with this extremely vulnerable group of individuals to prevent the development of this serious complication of type 1 diabetes.

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