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Letters to the editor

Decay of haemoglobin A_{1c} upon return to normoglycaemia

Dear Sir,

In the early days of HbA_{1c} assessment, changes in glycated haemoglobin levels in diabetic patients were thought to take a matter of weeks [1]. According to this hypothesis the HbA_{1c} assay should not be very useful in monitoring the dynamics of sustained changes of blood glucose, e.g. of the return to normoglycaemia [2] in previously poorly controlled diabetes mellitus. As there are no data available on this matter, the decay of HbA_{1c} in response to a significant, abrupt, and sustained reduction of glycaemia was studied in nine patients with newly-diagnosed diabetes (five Type 2 non-insulin-dependent, four insulin-dependent). In all of the patients, immediate and sustained normalisation of chronic hyperglycaemia (15–21 mmol/l) was achieved by either hypocaloric diet (Type 2 diabetic patients), or insulin treatment. Normal blood glucose (< 7.5 mmol/l) was confirmed repeatedly over a 15–49 day period. Initial HbA_{1c} (the normal mean of our laboratory is 4.9% (2 SD 0.7%)) as determined by high performance liquid chromatography (Diamat; Bio-Rad Laboratories, Munich, FRG) declined from initial values of 10.7–14.1% by approximately 1% per 10 days of normoglycaemia (Fig. 1). This correlation proved to be reproducible upon re-testing of patients. In the absence of other disorders [3, 4], a decline of HbA_{1c} by 1% per 10 days therefore, indicates a sudden and sustained reduction of the average levels of hyperglycaemia by 8–14 mmol/l, a condition which might be hazardous to some diabetic patients with previous, chronic, excessive hyperglycaemia and incipient diabetic retinopathy [2, 5–9].

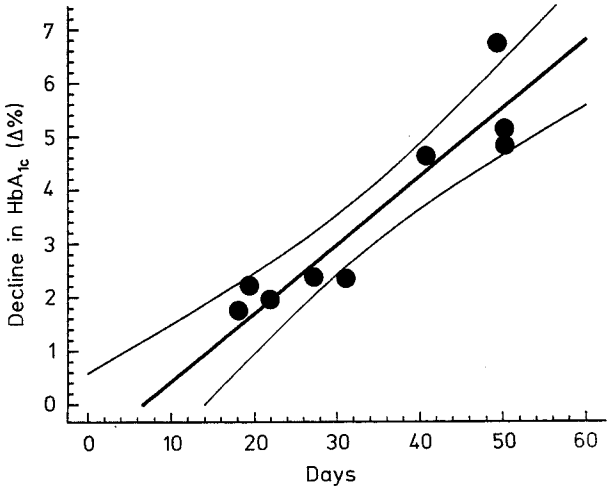

Fig. 1. Decline in HbA_{1c} (Δ%) plotted against time (days), in newly-diagnosed diabetic patients after immediate and sustained normalization of hyperglycaemia (with 95% confidence interval). $y = -0.85 + 0.13 \times$; $r = 0.94$, $p = 0.0014$

Yours sincerely,
E. Chantelau

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Height and glucose tolerance

Dear Sir,

Brown et al. [1] report a significant negative association between post-load plasma glucose and height. This prompted us to re-examine the data from the Whitehall Survey [2]. In this study 18322 men aged 40–64 years drank 50 g glucose after an overnight fast and capillary blood was obtained 2 h later. Blood glucose was measured by the ferricyanide reaction in an autoanalyser. Because of the negative association of age and height, correlations between height and 2-h blood glucose were sought within five-year age groups using Spearman's method. Only in the age group 40–45 years was there a significant correlation ($r = 0.05$, $2p = 0.01$). The correlation is nevertheless low and significance may be due to the large sample size.

Brown et al. [1] also observed that persons with impaired glucose tolerance (IGT) were, on average, significantly shorter than control subjects. As we used a 50 g oral load we have used a slightly lower

Table 1. Mean age-adjusted height by glucose tolerance group

Patient group	*n*	height (cm)	95% confidence interval
Normoglycaemic	18162	175.9	175.8, 176.0
Impaired glucose tolerance	70	174.7	173.2, 176.3
Known and newly-diagnosed diabetic	191	173.8[a]	172.9, 174.8

[a] significantly different from normoglycaemic group ($2p < 0.05$)

cut-off point for IGT (2 h value > 7.2 mmol/1 and < 11.1 mmol/1). We have also separately analysed the known and newly-diagnosed Type 2 (non-insulin-dependent) diabetic patients. The results are shown in Table 1. Mean age-adjusted height was lower in both the men with IGT and those with Type 2 diabetes, though statistically significant only in the latter group. However, the absolute differences in mean age-adjusted height were small – 1.2 cm for men with IGT and 2.1 cm for men with Type 2 diabetes – and less than the 3.5 cm difference between men with IGT and control subjects in the study of Brown et al.

Thus, our results differ from Brown et al. in that we find no overall relationship between height and glucose tolerance, but we are in partial agreement with their observation of lesser than average height in men with glucose intolerance.

Yours sincerely,
R. J. Jarrett and A. P. Fitzgerald

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Response from the authors

Dear Sir,

We welcome Jarrett and Fitzgerald's analysis of the Whitehall study data following our observations [1] that short stature is associated with impaired glucose tolerance. We would be most interested in hearing from others who have made similar analyses of their own data. The Whitehall analysis was partly in agreement with our own findings but we note the important areas of disagreement. These are not unexpected since there were methodological differences between the way the glucose tolerance tests were carried out in Whitehall and in our own study but, more importantly, different populations will have encountered different environmental influences at times critical for growth and development.

Yours sincerely,
C. D. Byrne, P. M. S. Clark, B. D. Cox,
N. E. Day, C. N. Hales, T. W. N. Wang and D. R. R. Williams

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