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 in-

itial 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].

Yours sincerely,
E. Chantelau

References

1. Leslie RDG, Pyke DA, John PN, White JM (1979) Fast glycosylation of haemoglobin. Lancet: 773–774 (Letter)
2. Keen H (1984) Normoglycaemia re-entry and diabetic complications. Diab Med 1: 85–86
3. Starkman HS, Wacks M, Soeldner JS, Kim A (1983) Effect of acute blood loss on glycosylated haemoglobin determinations in normal subjects. Diab Care 6: 291–294
4. Gram-Hansen P, Eriksen J, Mourits-Andersen T, Olesen L (1990) Glycosylated haemoglobin (HbA_{1c}) in iron- and vitamin B 12 deficiency. J Intern Med 227: 133–136
5. Daneman D, Drash AL, Lobes LA, Becker DJ, Baker LM, Travis LB (1981) Progressive retinopathy with improved control in diabetic dwarfism (Mauriac's Syndrome). Diab Care 4: 360–365
6. Knight G, Talbot JF, Ward JD (1984) Optic neuropathy associated with rapid tightening of blood glucose control. Lancet I: 681 (Letter)
7. Lawrence GR, Bedford GJ, Thomson R (1985) Rapid development during puberty of proliferative retinopathy after strict diabetic control. Lancet II: 332 (Letter)
8. Dandona P, Bolger JP, Boag F, Fonesca V, Abrams JD (1985) Rapid development and progression of proliferative retinopathy after strict diabetic control. Br Med J 290: 895–896
9. Ramsay RC, Goetz FC, Sutherland DER (1988) Progression of diabetic retinopathy after pancreas transplantation for insulin dependent diabetes mellitus. N Engl M Med 318: 208–214
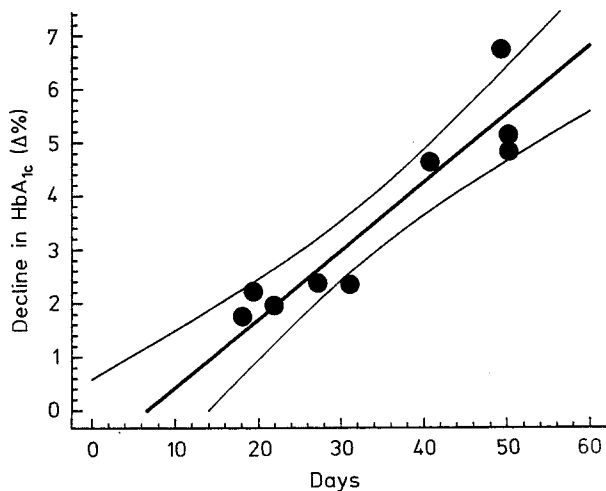
Fig. 1. Decline in HbA_{1c} (Δ %) plotted against time (days), in newly-diagnosed diabetic patients after immediate and sustained normalization of hyperglycaemia (with 95 % confidence interval). $y = -0.85 + 0.13 \times ; r = 0.94, p = 0.0014$

Dr. E. Chantelau
Diabetesambulanz, MNR-Klinik
Heinrich-Heine-University Düsseldorf
Moorenstrasse 5
W-4000 Düsseldorf 1
FRG

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