DM

Letters

Current methods of transfer of young people with Type 1 diabetes to adult services

We read with interest the recent paper [1] on transfer of people with diabetes from paediatric (PDS) to adult (ADS) services. We have undertaken a similar study in a single centre, to evaluate the outcome of transfer and to identify factors associated with success or failure of the process. Individuals transferred aged 17 years from an evening paediatric clinic staffed by paediatric and adult physicians to an adult clinic within the same teaching hospital or to one of two neighbouring district general hospitals (DGHs), or at the subject's request, to their GP.

Patients transferred from the PDS in the preceding 5 years were identified. An ADS hospital clinic attendance rate of 75% (known to be associated with lower serum HbA_{1c} concentrations [2]) was used to define 'attenders' (gross attendance rates > 75%) and 'defaulters' (attendance rates < 75%). Hospital case records were reviewed for demographic, diabetes-related and clinic-related data. Patients were invited by letter to a structured interview, either in person or by telephone, based on two questionnaires:

1 The Experience of Diabetes Care Questionnaire (EDCQ)—a measure developed for this study, to address individual's experience of the diabetes clinics and of living with diabetes.

2 The Personal Model of Diabetes Interview (PMDI)—an abbreviated version of Personal Model of Diabetes Questionnaire [3] which addresses individual's beliefs about the seriousness of the condition and treatment effectiveness.

Of 92 patients transferred, records were available for 84 (91%) and 43 were interviewed. Half were transferred to the ADS in the same hospital, 28% to their local DGH ADS and 22% to their GP. There were no significant differences between attendance groups in gender, age of diagnosis or transfer, family history of diabetes, presence of retinopathy, injection regimen, diabetes-related admissions, attendance in the PDS in the last year or HbA_{1c} at transfer. As previously reported [1], administrative arrangements for transfer were generally good, with transfer letters and appointments given for the ADS in all but three cases.

There were more missed appointments during the first year in the ADS than the last year in the PDS (median (range) 2 (0–5) and 0 (0–5), respectively; $P < 0.001$). Although the prior definition of the groups would predict more 'attenders' than 'defaulters' would attend the first appointment in the ADS, the difference was large, with 96% of 'attenders' keeping that first appointment compared with 33% of 'defaulters'. 'Defaulters' lived further ($P < 0.001$) from the clinic than 'attenders'.

There were no significant differences between 'attender' and 'defaulter' groups in their perceptions of the adequacy or effectiveness of self-care. Both rated the importance of managing diabetes similarly. However, 'attenders' were more confident ($P < 0.05$) in their ability to manage their diabetes well. Although not statistically significant, defaulters tended to be more troubled by having diabetes and regarded treatment as less effective. In terms of changes to the ADS, 62% said they would prefer a clinic for under 30-year-olds, 40% would prefer different clinic times, in particular an evening clinic, and 27% wanted more frequent appointments.

The main findings of this study were the importance of geographical distance between the patient's home and clinic, the possible longer-term impact of failure to attend the first ADS appointment, and the 'attenders' confidence in their ability to manage diabetes well. Whereas this confidence may be engendered by the ADS, this finding also suggests that it is confidence which assists in the transition. Factors such as distance to clinic, familiarity with staff and hospital setting may impact on this confidence.

Given these findings, we have developed a 'handover' clinic physically located in the ADS clinic. This 'handover' clinic is staffed by nurse specialists and doctors from both services, but responsibility for ensuring attendance is delegated to the paediatric team. Individuals with diabetes are seen once in this clinic before follow-up in a new ADS clinic designed specifically for those who have previously attended the 'handover' clinic, with the focus of effort being to help the young adult develop confidence in the management of their diabetes.

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References

1 Kipps S, Bahu T, Ong K, Ackland FM, Brown RS, Fox CT *et al.* Current methods of transfer of young people with type 1 diabetes to adult services. *Diabet Med* 2002; **19**: 649–654.

2 Dyer PH, Lloyd CE, Lancashire RJ, Bain SC, Barnett AH. Factors associated with clinic non-attendance in adults with type 1 diabetes mellitus. *Diabet Med* 1998; **15**: 339–343.

3 Hampson SE, Glasgow RE, Foster LS. Personal models of diabetes among older adults: relationships to self-management and other variables. *Diabetes Educator* 1995; **4**: 300–307.

Insulin resistance in essential hypertension: a conflictive point of view

Although most physicians and researchers acknowledge essential arterial hypertension to be a state of peripheral insulin resistance [1] and concede an aetiological role of insulin in raised blood pressure [2], the scientific evidence is contradictory [3]. The aim of our work was to present the results of our research into the quantification of insulin resistance in essential arterial hypertension, and explore a relationship with blood pressure that would indicate insulin resistance or insulinaemia as a contributor to the physiopathology of essential arterial hypertension.

Forty-nine male patients with slight-to-moderate essential arterial hypertension, no glucose intolerance and no family history of diabetes mellitus or microalbuminuria were studied. The purpose, nature and potential risks of the study were explained before obtaining written consent from the subjects. This study was carried out according to the ethical guidelines of the Declaration of Helsinki. The subjects receiving drug treatment underwent a washout period of at least 4 weeks. The control group was composed of 40 normotensive subjects, with no glucose intolerance or family history of diabetes mellitus or essential arterial hypertension. The insulin resistance was estimated from the basal steady state using the HOMA (Homeostasis Model Assessment) method [4] [$HOMA_{IR}$: FPI/(22.5 $e^{-\ln FPG}$), where FPI (mU/l) is the fasting plasma insulin and FPG (mmol/l) the fasting plasma glucose], and the QUICKI (Quantitative Insulin-Sensitivity Check Index) value [5] {QUICKI = $1/[\log(I_0) + \log(G_0)]$, where I_0 (μU/ml) and G_0 (mg/dl) are the basal insulinaemia and glycaemia levels, respectively}. These indices were chosen because they apparently show a good correlation with the results of the euglycaemic-hyperinsulinaemic clamp [5], particularly for the obese ($r = 0.89$), generally the case for our hypertensive patients.

Those with hypertension were generally older than controls (44 ± 8 vs. 29 ± 9 years old, $P < 0.001$) but equivalent in terms of body mass index (BMI 29.3 ± 3.4 vs. 28.3 ± 7.6 kg/m^2, P = NS). Arterial blood pressure (BP) was obviously different between groups (systolic BP 128 ± 6 vs. 152 ± 13 mmHg, $P < 0.001$; diastolic BP 77 ± 4 vs. 100 ± 8 mmHg, $P < 0.001$). We found no significant differences in the $HOMA_{IR}$ values (control group vs. essential arterial hypertension $3.47 \pm 2.66\%$ vs. $3.26 \pm 1.84\%$, P = NS) or in the QUICKI values (control group vs. essential arterial hypertension 0.331 ± 0.031 vs. 0.329 ± 0.026, NS). A covariance analysis was performed to examine the influence of age and BMI on insulin sensitivity, but the results remained unchanged. Neither the FPI nor the insulin resistance indices correlated significantly with blood pressure (see Table 1).

Table 1 Correlations (Pearson's r) between the insulin resistance indices and blood pressure values in a group of hypertensives ($n = 49$)

	$HOMA_{IR}$	QUICKI	FPI
Systolic BP (mmHg)	–0.039	–0.120	–0.018
Diastolic BP (mmHg)	0.042	–0.069	0.078

None of the correlations is significant. BP, Blood pressure.

In conclusion, our results suggest that essential arterial hypertension is not a generalized insulin-resistant state and that insulin resistance is not a significant physiological regulator of blood pressure. Nonetheless, we cannot exclude the influence of insulin resistance in certain subpopulations of hypertensive patients [6–8].

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References

1 Ferrannini E, Buzzigoli G, Bonadonna R, Giorco MA, Oleggini M, Graziadei L *et al.* Insulin resistance in essential hypertension. *N Engl J Med* 1987; **317**: 350–357.

2 Reaven GM. Role of insulin resistance in human disease. *Diabetes* 1988; **37**: 1595–1607.

3 Cabezas-Cerrato J, García-Estévez DA, Araújo-Vilar D. Lack of association between both insulin resistance and plasma insulin levels with blood pressure values in essential hypertension. *Horm Metab Res* 1997; **29**: 561–565.

4 Mattews DR, Hosker JP, Rudenski AS, Naylor BA, Treacher DF, Turner RC. Homeostasis model assessment: insulin resistance and β-cell function from fasting plasma glucose and insulin concentrations in man. *Diabetologia* 1985; **28**: 412–419.

5 Katz A, Nambi SS, Mather K, Baron AD, Follmann DA, Sullivan G *et al.* Quantitative insulin sensitivity check index: a simple accurate method for assessing insulin sensitivity in humans. *J Clin Endocrinol Metab* 2000; **85**: 2402–2410.

6 Bianchi S, Bigazzi R, Quiñones-Galvan A, Muscelli E, Baldari G, Pecori N *et al.* Insulin resistance in microalbuminuric hypertension. Sites and mechanism. *Hypertension* 1995; **26**: 789–795.

7 Sharma AM, Schorr U, Distler A. Insulin resistance in young salt-sensitive normotensive subjects. *Hypertension* 1993; **21**: 273–279.

8 Chen JW, Jen SL, Lee WL, Hsu NW, Lin SJ, Ting CT *et al.* Differential glucose tolerance in dipper and nondipper essential hypertension: the implications of circadian blood pressure regulation on glucose tolerance in hypertension. *Diabetes Care* 1998; **21**: 1743–1748.