Improvements in the lifestyle of patients who have had type 1 diabetes for 50 years: an optimistic message

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To the Editor: The life expectancy of patients with type 1 diabetes continues to improve. Better care has reduced the frequency of organic complications and improved their management. But what is the impact upon quality of life? Two studies, the UK Golden Years cohort [1] and the 50 year Joslin Medalist study [2], have examined the clinical characteristics of type 1 diabetic patients with long disease duration. Here we describe a Parisian cohort and evaluate the lifestyle of patients suffering from this chronic disease for 50 years.

Investigators (J.-J. Altman, S. Feldman-Billard) at two centres followed 57 patients with a mean duration of type 1 diabetes of 49.8 ± 7.6 years on an outpatient basis over several decades. Standard clinical data, common laboratory tests and regular screening for chronic complications were recorded, as well as markers of metabolic control and diabetes treatment (Table 1). All patients gave informed consent and completed a quality of life questionnaire during a routine visit. The main items on the questionnaire were marital status with description of offspring, physical

activity and social life (cultural, training, travelling, sexual activity). Data concerning professional life included: educational level, professional activity, retirement, working days missed because of the disease and impact on professional life. The patients were also asked to classify the burdens impairing their life, to evaluate the main improvements in the treatment of the disease during their lifetime and to specify the most helpful person/organisation in their life (see text box). Statistical analysis was performed with the SPSS statistical software version 14.0 for Windows (SPSS, Chicago, IL, USA). The variables presented were summarised as means $\pm$ SD.

Mean systolic and diastolic blood pressure was 137.4 ± 22.9 and 78.4 ± 9.5 mmHg, respectively. Treatment and monitoring followed the rules of intensified therapy, but mean HbA_{1c} was $8.6 \pm 1.3\%$; only 10% of patients had an HbA_{1c} value below 7%. Mean HDL-cholesterol was higher than 1.25 mmol/l in 86% of patients. Poor vision, with visual acuity $< 20/200$, was present in 19% of the patients, with a similar number having serum creatinine above 120 μ mol/l. Only one patient had no evidence of diabetic retinopathy [3] and five were blind. Three others had functioning kidney grafts, combined with a pancreas graft in one case. Two were on regular haemodialysis.

Some 81% of patients had married and 9% were divorced; 84% of patients had at least one child. On average, they had 1.40 ± 1.23 (range 0–4) children and 1.24 ± 1.96 (0–7) grandchildren, with no difference between men and women. Only five men and four women had no children. All but two were independent. Physical activity of more than 30 min per day was reported by 86% and gardening by 25%. Social life was rated as being impaired by 54%, but nearly all patients went regularly to the cinema (93%), theatre (81%) or restaurants (91%). Half engaged in

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List of burdens and improvements in the treatment of diabetes		
Burdens	Improvements	Help from other people
SMBG (1)	Early detection of complications (1) ^a	Spouse (1)
Diet (2)	Laser therapy (1) ^a	Diabetologist (2)
Visual impairment (3)	Self-monitoring of blood glucose (3)	General practitioner (3)
Insulin injections (4)	Insulin pens and disposable equipment (4)	Parents
SMURG	Premix insulins	Psychologist/psychiatrist
Kinetic impairment	Educational programme	Other diabetic patients
Limitations of physical activity	Liberalisation of diet	Associative organisation
Difficulties when going out	Interest in mental status of patient	
Hypoglycaemia	Help from associative organisation	
Pregnancy management	Normal pregnancy outcome	
Impairment of sexual life	Accessibility of contraceptive method	
Impairment of professional life		
Risk of depression		
Familial relationship alteration		
Most quoted factors are numbered in order of frequency		
^a Joint most frequent		
SMBG, self-monitoring of blood glucose; SMURG, self-monitoring of urinary glucose		

sport on a regular basis, and 60% made use of public transport; the same proportion travelled regularly, mostly abroad. Regular sexual activity was reported in the past by 81% and was current in 60%. Educationally, 60% had a university degree; all but three patients were employed (90% full time), none had asked for early retirement and 40% were still working at the time of the study. Fifty-four per cent had never missed work because of diabetes, although half considered that the condition had restricted their professional activity.

The most frequently reported burdens were the need to self-monitor blood glucose, the need for perpetual diet, visual impairment and insulin injections. The four most popular improvements were the use of laser therapy in the management of chronic complications, followed by glucose monitoring, insulin pens and disposable equipment. In order of importance, the most helpful persons in their life were their spouse, their diabetologist and their general practitioner (see text box).

A quarter of a century ago, the life expectancy of a 25-year-old type 1 diabetic patient, was 33 years [4]. Our patients had a mean period of 35 years free from significant complications impairing their life. Our type 1 diabetic Parisian cohort resembled the Golden Years cohort [1].

Macroangiopathy was rarely present, because of, at least in part, a favourable cholesterol ratio [5]. In the 50 year Medalist study, HDL-cholesterol was high and mean HbA_{1c} was elevated as in our group, but close to half did not report any significant microvascular complications [2]. The Medalist study also reported a lack of association between glycaemic control and the prevalence of such complications [2]. The low dose of insulin needed was comparable to ours. The authors of the above two studies [1, 2] speculate that their patients could possibly be protected by a favourable genetic background. Fertility was initially described as reduced in type 1 diabetic women but normalisation has occurred in more recent cases [6]. It is notable that in our cohort the fertility ratio was the same in women as in men.

All our patients were followed by the same practitioners for decades and the questionnaires were completed after about 50 years of diabetes. In other studies, quality of life questionnaires were mainly addressed to patients with a rather shorter duration of diabetes [7, 8]. It is not possible to compare our cohort with non-surviving patients selected by the time and age of diagnosis. Comparison with type 2 diabetic patients is not relevant. Of course, our cohort was selected by life, environment, socio-cultural status, genes and metabolism, as well as many other possibilities. We

Table 1 Characteristics of the 57 patients of the Parisian Cohort

Characteristic	Mean±SD or %
Diabetes duration (years)	49.8±7.6
Male patients	47
Age (years)	67.1±10.8
Age at diagnosis of diabetes (years)	17.3±9.3
Patients with BMI <25 kg/m ²	67
HbA _{1c} (%)	8.6±1.3
Patients with HbA _{1c} <7% (%)	10
Insulin dosage (IU kg ⁻¹ day ⁻¹)	0.52±0.20
Patients with insulin dosage <0.3 IU kg ⁻¹ day ⁻¹ (%)	19
Patients with three to five insulin injections per day (%)	60
Patients self-monitoring blood glucose more than once a day (%)	97
Systolic blood pressure (mmHg)	137.4±22.9
Diastolic blood pressure (mmHg)	78.4±9.5
Patients with blood pressure <40/80 mmHg without treatment	19
Patients with LDL-cholesterol <3.30 mmol/l	82
Patients with HDL-cholesterol >1.25 mmol/l	86
Patients with no retinopathy or non-proliferative retinopathy	19
Patients with severe non-proliferative retinopathy	21
Patients with proliferative retinopathy	60
Patients with photocoagulation	79
Patients with macular oedema	35
Patients with low vision	19
Patients with cataract surgery	96
Patients with serum creatinine >120 µmol/l	19
Patients with micro- or macroalbuminuria	32
Patients with at least one child	84
Number of children	
Men and women combined	1.40±1.23
Men only	1.53±1.39
Women only	1.30±1.11
Patients with at least one grandchild	37
Number of grandchildren	1.24±1.96

have no way of demonstrating which of these factors is the most prominent. This important problem was not the focus of our study. Importantly, for whatever reason, we have been able to show that a rather large cohort of patients with type 1 diabetes, a previously fatal disease, were able to enjoy familial, professional and socio-cultural success. For diabetic patients, who spend so much time and effort coping with their disease, this is a truly optimistic message.

Duality of interest The authors declare that there is no duality of interest associated with this manuscript.

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