Personality Characteristics, Environmental Factors and Glycemic Control in Adolescents with Diabetes*

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Metabolic control in adolescents with diabetes is difficult to achieve and seems to depend in part on personality and the family environment. We tried to identify relevant characteristics in this study. We administered the Children's Manifest Anxiety Scale, a Self-Competence scale, a Locus of Control Scale, and a structured interview, to 40 adolescent diabetics and 39 healthy controls, and the Rotter Locus of Control Scale to mothers. There were indications of more depressive thoughts and feelings (P = 0.036) and slightly more anxiety (P = 0.065) in the diabetics than in the controls. The diabetics who put in more effort at school had better metabolic control. Also, the diabetics who worried about their illness (P = 0.021) and the ones who belonged to lower social class (P = 0.011) had poorer metabolic control than others. The diabetics did not differ in locus of control and self-competence from controls. Locus of control, self-competence and anxiety were not correlated to HbA1c values.

Glycemic control in subjects with Insulin-Dependent Diabetes Mellitus (IDDM) is difficult to achieve, particularly during adolescence.

In our experience, the acquisition of knowledge regarding insulin, diets and the need for exercise is relatively easy, yet obtaining compliance for long periods and especially avoiding rejection of the diabetic routine during adolescence are more difficult tasks.

Having concluded from our clinical experience, that it was not the lack of knowledge which affected the capability of our adolescent patients to reach metabolic control, we initiated a study aiming at identifying psychological and environmental factors associated with the well-being of our patients.

Psychological factors like anxiety, and self-esteem which greatly affect a person’s ability to adapt, have been studied in regard to diabetic children and adolescents but the evidence concerning their importance remains inconclusive (Swift et al.; 1967, Cerreto & Travis 1984; Rovet et al., 1987; Johnson, 1988).

We report here the findings of our investigation in which we examined anxiety, lack of self-competence, depression, locus of control and the importance of social class in a group of diabetic adolescents and healthy controls.

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indices and most recent studies use this value as the most reliable and objective measure. This was adopted in the present study; in each subject the mean value from 2 to 4 values obtained over one year was used for the analysis. HbA1c was determined by Isolab reagents method.

The mean duration of diabetes was 5.51 ± 3.65 years. The mean age of onset was 9.3 ± 3.3 years.

To characterize social class we used two factors, parental education and profession. Our subjects belonged mostly to social class II and III according to the Hollingshead (1958) classification, with a few in class IV. No differences existed between the sample and both the general population and the population of adolescents with diabetes. Table I shows the sample characteristics.

For controls we used 39 healthy adolescents of similar age, sex and socioeconomic class distribution to our subjects. They were selected at random from the population of two schools.

We administered the following tests: 1) The Children's Manifest Anxiety Scale (C.M.A.S.) (Castaneda et al., 1956). This consists of 53 items, 42 concerning anxiety and 11 constituting a Lie scale. Factor analysis established 5 factors, three related to anxiety (Worry and Oversensitivity, Physiological, and Concentration) and two lie factors, Social Impeccability (items concerning perfect characteristics and the seeking of 'best behavior') and Over Self-control (items suggesting an ability to maintain self-control). 2) Self-Competence was measured by the Perceived Competence Scale (Harter, 1982) for children, in subjects aged 11–13 years, and the Perceived Competence Scale for Adolescents in the remainder. These scales comprise four subscales examining the following domains of competence: Cognitive, Social, Physical and General Self-worth. 3) The Locus of Control was measured by the Nowicki and Strickland Scale (1973). This scale examines the general belief of the person in internal or external control. When an event is perceived to be the result of luck or fate, or as under the control of powerful others, then this is a belief in external control. When the event is perceived as contingent upon the person's own behaviour then there is a belief in internal control. 4) The Locus of Control was measured in mothers through the use of the Rotter Scale (1960), which has been found to measure the same construct in Adults as the Adult Nowicki-Strickland Scale. 5) A structured interview developed by one of us (M. L.) was administered to 40 diabetic subjects and their controls, in which family and social relationships, school achievement, fears about diabetes and future plans were examined. A rating of definite or slight psychiatric disorder was made at the end of the interview, based on the model of the Rutter-Graham interview (1968). The items of our interview reflected primarily the existence of anxiety or depression. If obsessive-compulsive or psychotic symptomatology was found, a special mention was made.

Statistical Analysis

Comparisons between groups employed, for qualitative data, the chi-squared test with Yates' correction and, for quantitative data, either the t-test or the Mann-Whitney test, as judged appropriate from the distributions of the variables. Correlations were computed using Pearson's product-moment coefficient or Spearman's rank correlation coefficient, again as deemed appropriate.

Since the study was exploratory in nature, rather than aimed at formally testing specific hypotheses, it was felt preferable to report results without adjusting significance levels for multiple testing, so that potentially interesting findings would not be overlooked.

Results

Anxiety

No difference was found in the mean values for each subscale of the CMAS between the two groups but a higher level of statistical significance was found when two broad subscales of the CMAS were considered, the anxiety and the lie, as shown in Table 2.