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Elevated plasma fibronectin is associated with increased blood viscosity and red cell aggregation in diabetic children.

The pathogenesis of diabetic vascular disease is not clear. Alterations in hemostasis and in hemorheology may play an important role in pathogenesis and/or propagation of diabetic vascular disease. To investigate, whether alterations in blood rheology can be shown prior to the first detectable signs of vascular disease, viscosity of blood, plasma, and red blood cell (RBC) suspensions, filterability of RBC suspensions, fibrinogen, alpha$_2$-macroglobulin, and plasma fibronectin (PFN) were studied in 25 diabetic children. All were without signs of diabetic vascular disease. Viscosity of blood and of RBC suspensions in plasma were significantly higher, filterability of RBC suspensions in plasma was significantly lower in the group with poor diabetic control. Plasma viscosity, fibrinogen and alpha$_2$-macroglobulin levels did not differ in the groups, but PFN was significantly elevated in the group with poor control. Our results show that rheological alterations can be demonstrated in diabetic children without vascular disease but with poor diabetic control. These alterations seem mainly due to an elevated tendency of the RBC to aggregate in their native plasma. Elevated PFN might be the cause for the observed rheological alterations.

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Phenotypic and functional T cell abnormalities in children with IDDM.

Conflicting data have been reported concerning T cell abnormalities in IDDM. We evaluated some functional and phenotypic parameters of peripheral T lymphocytes in 12 newly diagnosed children with IDDM: 1)T cell activation, by anti-HLA-DR monoclonal antibodies (MAbs), and 4F$_2$,MLR4, 5E9(antitransferrin receptor) MAbs.2) The expression of 5/9antigen (defining in normal individuals a small subset described as "helper-inducer") 3)The expression of T8 antigen(by B9.4MAbs, described as a stable phenotype of cytotoxic, or precursor of cytotoxic,T sells).4) The autologous mixed lymphocyte reaction (AMLR), i.e. the ability of T cells to proliferate when co-cultured with autologus non T cells: this reaction is supposed to be related to the ability of immunocompetent cells to cooperate.The results obtained showed an increase of some activation markers of T cells, namely 4F$_2$ and 5E9, in the majority of the patients, whilst HLA-DR expression did not significantly differ from controls. This is partially at variance of previous studies.Both 5/9$^+$ and B9.4$^+$T cell percentages were significantly increased.With regard to AMLR, an impairment was apparent in 1/2of the patients. When the culture was performed in serum free medium (HB103) addition of exogenous insulin restored AMLR proliferation in some patients. These preliminary findings are consistent with the possibility of T cell abnormalities in IDDM.

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Glucose tolerance and β-pancreatic function in polytransfused thalassemia major children. A transversal and longitudinal study.

Glucose tolerance(GT) and β-pancreatic function(PF) were both evaluated transversally in 18 thalassemia major children (Th) on i.m. or s.c. injection of DFO by OGTT. A longitudinal study was performed on 5 of them. Our data show a progressive impairment of GT (positive correlations between glycemic (BG) values and age, GT reduced in 25% of 6-10 y. Th and in 60% of 10-16 y. Th). This seems to depend on: 1) a progressive impairment of PF (slight insulin(IRI) increase in Th over 6 years with respect to control children (C), presence of positive correlations between IRI, C-peptide (Cp) and IRI/BG ratio values and age only in C); 2) a precocious impairment of IRI metabolism (greater IRI and IRI/Cp ratio basal values in 6-10 y. Th than in C, positive correlations between BG and IRI both as basal and as 30 min. values in C and between BG and Cp as 30 min. values in Th) probably secondary to a precocious liver damage (positive correlations between 60 and 120 min. BG values and some liver function tests). Only the PF impairment seems to be reversible and ferritin-dependent (positive correlations between variations in BG and IRI values and variations in ferritin (FE) values in the longitudinal study, in absence of any difference in individual sensitivity; absence of any correlation between variations in liver function tests and variations in FE levels).

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Some psychological aspects of young type-I-diabetics and of their parents

30 type-I-diabetic outpatients (15 m. and 15 f., mean age 11.5, range 7-17 yrs) and 47 healthy age-,sex-, and socioeconomically matched schoolchildren were subaitted to the Louis Corman's family test. The diabetics were subdivided into group A (good control= HbA1 <10), B (fair control= HbA1 10-12), and C (bad control= HbA1 >12). The diabetics differred from the control group in: 1) the non-representation of one or more brothers/sisters (X^2: P<0.05), which indicates difficulty in overcoming fraternal rivalry;2) representation of self as a younger child (X^2 :P<0.02), a defense against the illness anxiety; 3) self representation without or with maimed hands (X^2 :P<0.05) attributable to a strong inhibition in social contacts; 4) infrequent sexual differentiation in the children's drawings (X^2:P<0.05), more evident in children with onset in younger age (P<0.01, onset at 9.2 vs 5.79 yrs), possibly due to the regression to childhood and to the exagerate dependence from the mother. Moreover, 23 mothers of our diabetics and 30 mothers of the control group were examined. The Parental Attitude Research Instrument (P.A.R.I.) and the Heckausen & Kemmler questionary were administered. The statistically different results are the followings. P.A.R.I. test: 1) fear to hurt, which indicates incounscious hostility versus the ill child (P <0.05), 2) refuse of being a housewife (P<0.05); 3) feeling of not being able to cope with the maternal role and strong dependency from other persons. H.& K. test aiming at revealing mother's expectations as to her child: 1)postponement of the age the child should participate autonomously to some social events (i.e. take the bus and/or the train on his/her own, buying and shopping alone (P<0.01)),and anticipation of some other autonomies (i.e. sphincterial control, pocket money (P<0.01)). The postponement of the autonomies implying spatial separation and the demand for a more precocious behavioural control probably aggravate the problem of the diabetic child moving onto adolescence.

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HLA-DR ANTIGENS AND THYROID AUTOANTIBODIES IN DIABETIC CHILDREN.

Diabetic children seem to be at risk to develop thyroid autoimmune disease. 110 diabetic children (48 fem, 62 males, mean age 12,3±3,8yrs.) were HLA-DR-typed and their sera were tested for the occurence of thyroid autoantibodies (TAB:antithyroglobulinantibodies and microsomal antibodies). Thyroid function was determined by measurement of thyroxine (T_4) and thyrotropin (TSH) levels. The control group (n=50) was age- and sex matched. TAB were found in 18% of the diabetic children and in 6% of control (p 0,05). There was a predominance of females in the TAB positive group (m:f = 1:1,8). 60% of the TAB-positive diabetic children were positive for HLA-DR3 compared to 54% of the TAB-negative diabetic children. Only one diabetic child had mild hypothyroidism. We conclude that HLA-DR3 does not represent an additional risk factor for the development of thyroid autoimmune disease and thyroid dysfunction is a rare phenomenon in diabetic children.

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Serum insulin, C-peptide and pancreatic polypeptide in response to food and non-food external cues in obese school girls.

As earlier studies have suggested an abnormal neuro-humoral control of the endocrine pancreas in obesity, we have investigated 11 obese school girls (89.3kg ± 15.2, mean ±SD) and 9 age-matched controls (45.9±7.8kg). Repeated blood samples (glucose, immunoreactive insulin (IRI), C-peptide,glucagon and pancreatic polypeptide (PP)) were drawn before and after: saccharin ingestion, the scent of a strong fragrant flower, the smell and sight of a pleasant meal which eventually was eaten. Blood glucose and glucagon levels were unchanged and similar in both groups. IRI and C-peptide values were consistently higher in the obese girls compared to the controls. After smell and sight of food the obese girls, in contrast to the controls, showed a small increase in insulin levels (p<0.1). PP-values were consistently lower in the obese group with a blunted response after the ingestion of food compared to the controls (227±81 and 516±99 resp.) Our results confirm earlier studies of elevated insulin levels after sight and smell of food in obesity. However non-food external cues had no impact on the parameters studied. The low PP-values and the blunted response in the obese girls after the intake of food is difficult to explain. Further studies will be required before the possible role of disturbed PP-scretion in the etiology of obesity can be clarified.