

Background and aims Type 1 diabetes (T1D) is an autoimmune disease that results from the progressive and selective destruction of pancreatic beta cells. Trace elements have a key role as well as in adaptive immunity in inflammatory processes. The aim of this study was to measure circulating levels of Zinc (Zn), Copper (Cu), and protein fractions in patients with T1D.

Methods Sixty (60) subjects aged less than 15 years, divided into two similar groups (30 with recently type 1 diabetes and 30 controls) were recruited in the Department of Paediatrics of Tlemcen University Hospital. Zinc and copper were measured by polarimetry. The protein fractions were measured by zone electrophoresis on cellulose acetate (PFIC, serum protein electrophoresis) (HELENA, USA).

Results Serum Zn and Cu levels were significantly elevated in type 1 diabetes compared with controls (respectively, $p = 0.001$, $p = 0.002$, $0,05$). However, the percentage of alpha -1, alpha -2, beta and gamma globulins, and the total rate of serum globulins were identical in the two groups ($p > 0.05$). Conversely, the percentage of albumin and albumin/globulin ratio were significantly decreased in type 1 diabetes compared with controls ($p < 0.01$ and $p < 0.05$, respectively).

Conclusion Disorders Zn and Cu could be significant immunological abnormalities and inflammatory signs at the beginning of the installation of T1D.

PO-0052 NITRIC OXIDE, IMMUNOGLOBULINS AND LIPID PEROXIDATION IN TYPE 1 DIABETIC CHILDREN

¹M Smahi, ²M Aribi, ²L Ysmaildahlok, ²L Hamouda, ²W Meziane. ¹Pediatrics and Neonatology, Mother-Child University Hospital Tlemcen, Tlemcen, Algeria; ²University of Tlemcen, Laboratory of Applied Molecular Biology and Immunology, Tlemcen, Algeria

10.1136/archdischild-2014-307384.725

Background and aims To assess the levels of lipid peroxidation and circulating levels of nitric oxide (NO), lipoproteins and immunoglobulins in type 1 diabetes children.

Methods Thirty (30) type 1 diabetic patients newly diagnosed and 30 healthy control subjects, comparable for age (less than 15 years), sex and body mass index (BMI) were recruited in the Department of Paediatrics in the Mother and Child Hospital of Tlemcen. Lipid peroxidation was assessed by measuring the levels of malondialdehyde (MDA, CH₂ (CHO) 2) using the thio-barbituric acid (TBA). The serum NO_x (nitrate and nitrite, NO_x [NO₂⁻, NO₃⁻]) was measured as an indirect marker of the formation of NO *in vivo* by the Griess method. Lipoproteins were measured by ultrasensitive gel electrophoresis (SEBIA, France). Immunoglobulins were determined by the radial immunodiffusion technique (IDR).

Results Circulating levels of MDA and NO production were significantly higher in type 1 diabetic patients compared to controls (respectively, $p = 0.001$, $p = 0.01$). This was also the same for immunoglobulins A, G and M (for all comparisons, $p < 0.01$). Circulating levels of alpha lipoprotein and Lp (a) were similar in both groups ($p > 0.05$); however, those of the pre-beta and beta lipoproteins were significantly increased in patients compared to controls (respectively, $p = 0.039$, $p = 0.018$).

Conclusion The onset of the DT1 is associated with nitrogen stress and oxidation of circulating lipids. Also, the excessive formation of NO and MDA may be the result of inflammatory conditions associated with the autoimmune disease process.

PO-0053 HEALTH AFFECTING BEHAVIOUR CHANGES IN ADOLESCENTS WITH TYPE 1 DIABETES MELLITUS

V Bulikaite, V Grigaliuniene, A Vaskelyte. *Nursing and Care, Lithuanian University of Health Sciences, Kaunas, Lithuania*

10.1136/archdischild-2014-307384.726

Background Is very important to teach the patient with diabetes to live together with this incurable disease so they avoid late complications. The transference of knowledge to a patient does not always change his/her behaviour.

The aim To analyse changes of adolescents diabetes habits of nutrition, physical activity, smoking, and usage of alcohol before contracting diabetes and when 3, 6 and 12 month pass after the contraction of diabetes.

Material and methods The study was conducted in Children Endocrinology department, Hospital of Kaunas University of Medicine. 50 adolescents of 13–17 years old with diabetes participated in anonymous questionnaire survey. Pre-test and post-test design was used to conduct the study. The Wilcoxon's paired sample test was used to determine the difference in groups.

Results The study revealed that 41% who participated in the study did not eat regular, 22% did not attend any sports, 53% of adolescents were smoking and 40% of the surveyed were taking alcohol before contracting diabetes. When 3 months passed after the diagnosis of diabetes, the number of patients eating regular significantly increased, 89% not doing any sports, 16% were smoking, 12% admitted they were taking alcohol. After 6 and 12 months patients behaviour was changed ($p < 0,05$).

Conclusion Three months after diagnosis of diabetes mellitus most of adolescents ate regularly, there were less of those who smoked, consumed alcohol and the lowest number of those who exercised when compared with findings of surveys conducted before diagnosis and after six or twelve months.

PO-0054 EPIDEMIOLOGY OF TYPE 1 DIABETES MELLITUS IN CHILDREN IN TUNISIA

¹M Hachicha, ¹H Aloulou, ¹L Sfaihi, ²S Ben Becher, ²KH Bousetta, ³N Gandoura, ⁴N Gueddiche, ⁵T Gargah, ⁶N Tbib, ⁷L Boughammoura, ⁸A Harbi, ⁹K Habbouli, ¹⁰T Sfar, ¹¹A Bouziri, ¹²N Bouziri, ¹³F Bayouh, ¹⁴A Chouaibi, ¹⁵H Ben Ameer, ¹⁶S Yaich, ¹⁷TH Kammoun. ¹Pediatrics, Hédi Chaker University Hospital, Sfax, Tunisia; ²Pediatrics, Children's Hospital, Tunis, Tunisia; ³Pediatrics, Bizerte Hospital, Bizerte, Tunisia; ⁴Pediatrics, Monastir Hospital, Monastir, Tunisia; ⁵Pediatrics, Charle Nicolle Hospital, Tunis, Tunisia; ⁶Pediatrics, Rabta Hospital, Tunis, Tunisia; ⁷Pediatrics, Farhat Hachd Hospital, Sousse, Tunisia; ⁸Pediatrics, Sahloul Hospital, Sousse, Tunisia; ⁹Pediatrics, Kairouan Hospital, Kairouan, Tunisia; ¹⁰Pediatrics, Mahdia Hospital, Mahdia, Tunisia; ¹¹Pediatrics, Nabeul Hospital, Nabeul, Tunisia; ¹²Pediatrics, Jerba Hospital, Jerba, Tunisia; ¹³Pediatrics, Militaire Hospital, Tunis, Tunisia; ¹⁴Pediatrics, Sidi Bouzid Hospital, Sidi Bouzid, Tunisia; ¹⁵Pediatrics, Gafsa Hospital, Gafsa, Tunisia; ¹⁶Community and Preventive Medicine, Hédi Chaker University Hospital, Sfax, Tunisia

10.1136/archdischild-2014-307384.727

Introduction The geographical incidence of type 1 diabetes mellitus in children varies widely worldwide. Both genetic and environmental factors have been implicated.

Objective Evaluated the incidence of type 1 diabetes in children in Tunisia and identified the epidemiologic characteristics.

Patients and methods We conducted a retrospective study of new cases of type 1 diabetes in children (0 -15) years, discovered during the years 2009–2010–2011 in 17 paediatric centre from Tunisia.

We divided our patients into 3 groups: group 1 (0–4 years), Group 2 (5–9 years) and group 3 (10–15 years). These three

groups were compared with regard to their epidemiological characteristics.

Results We identified 627 diabetic children. They were 332 boys and 295 girls. The incidence was estimated at 8.5/100 000 children under 15 years and 9.6/100 000 children (0–4 years). The incidence was 7.7/100 000 children (0–15 years) in 2009, it passed to 8.93/100 000 in 2011.

The patients were aged 0–4 years in 33% of cases, 5–9 years in 34.1% of cases and 10–15 years in 32.9% of cases.

The discovery of diabetes was in winter in 35% of cases. Parental consanguinity was noted in 31.2% of cases.

Conclusion Type 1 diabetes is a public health problem in Tunisia, its incidence increases and the age of diagnosis shifts to ages younger. Winter predominance of discovery supports the hypothesis of a triggering viral infection.

PO-0055 INSULIN PUMP IN CHILDREN WITH TYPE 1 DIABETES IN A REGIONAL HOSPITAL IN IRELAND

A Pavel, O Oyedeji, J Jennings, J Chukwu. *Paediatrics, Our Lady of Lourdes Hospital, Drogheda, Ireland*

10.1136/archdischild-2014-307384.728

Introduction Initiation of insulin pump therapy in children with type 1 diabetes results in better glycaemic control, reduction in the short-term and long term complications and in better quality of life.

Objectives To determine the impact of insulin pump on glycaemic control (HbA1c), BMI and occurrence of severe complications in children with IDDM in a secondary care centre.

Methods A retrospective study of children with type 1 diabetes on insulin pump therapy for at least one year at the time of the study was conducted. HbA1c, BMI and frequency of severe complications one year before and after introduction of insulin pump were compared.

Results Twelve out of the thirty children (40%) on insulin pump therapy met our inclusion criteria. Their mean age at the time of the study was 12.6 years. Seven boys (58.3%) and five (42%) girls were studied. The mean duration of diabetes was 5.5 (± 2.2) years. The mean HbA1c before the introduction of pump therapy was 8.1% vs. 7.1% one year after; while the mean BMI z-score was 0.79 before and 0.88 after. Severe hypoglycaemia and DKA were noted in two children before but none after the initiation of pump therapy. The mean HbA1c decreased by 0.4% at 3 months (p 0.05) and by 1% at 2 months (p 0.013) of pump therapy.

Conclusions Initiation of insulin pump therapy results in significant reduction in the HbA1c within the first twelve months of therapy with a decrease in the frequency of occurrence of severe complications.

PO-0056 CLINICAL AND LABORATORY FINDINGS OF DIABETIC KETOACIDOSIS IN A PICU OF ALBANIA

¹I Bakalli, ¹E Celaj, ¹E Kola, ¹R Llluka, ¹D Sala, ¹I Kito, ¹I Gjeta, ¹S Sallabanda, ²E Klironomi. ¹PICU, UHC Mother Teresa, Tirana, Albania; ²Statistics, Albanian University, Tirana, Albania

10.1136/archdischild-2014-307384.729

Introduction Delay diagnosis is the major cause of Diabetic ketoacidosis (DKA). Children with profound acidosis are at great risk for symptomatic cerebral oedema.

Objective To identify the epidemiological profile, clinical feature, factors related to delayed diagnosis in children with DKA and to analyse the factors associated with prolonged acidosis.

Methods We analysed the records of all children with DKA, admitted to our PICU during January 2004–December 2013. We evaluated clinical features, biochemical profile at admission, 6, 12 and 24 hrs, presence of sepsis, shock, complications and outcome. The severity of DKA was defined by the degree of acidosis: mild ($pH = 7.2$ – 7.3), moderate (7.1 – 7.2) and severe ($pH < 7.1$). Anion gap (AG), delta gap (DG) and delta ratio were calculated. Prolonged acidosis was analysed against various independent factors.

Results Mean age of the patients was 7.06 ± 4.24 years, with misdiagnosis in 32% of cases. By the degree of acidosis, DKA was mild in 16%, moderate in 56% and severe in 28% of cases, with prolonged acidosis (>24 hrs) in 36% of cases. Factors associated with prolonged acidosis were: $Na > 133$ mEq/L ($p = 0.01$), $HCO_3^- < 4.8$ mEq/L ($p = 0.03$), $pH < 7.01$ ($p = 0.01$), $Cl^- > 100$ mEq/L ($p = 0.02$) and $AG > 25.1$ ($p = 0.03$). HbA_{1c}, azotemia, DG and misdiagnosis didn't result significant for prolonged acidosis. Three cases are complicated with cerebral oedema. Initial blood glucose or decline in glucose had no association with cerebral oedema. Mortality rate was 8%.

Conclusion Misdiagnosis of diabetes with DKA as consequence, is still high in children in Albania. Clinical and laboratory findings help identifying the patients who require a higher level of intervention.

PO-0057 ASSOCIATION OF DIETARY PATTERN WITH BIOCHEMICAL BLOOD PROFILES AND BODY WEIGHT AS RISK FACTORS OF CARDIOVASCULAR DISEASE AMONG ADULTS WITH TYPE 2 DIABETES MELLITUS

¹N Darani Zad, ¹H Esmali, ¹S Khalatbari, ²M Vaezi, ³M Hamedani. ¹Nutrition and Dietetics, Faculty of Medicine and Health Sciences Universiti Putra Malaysia, Serdang, Malaysia; ²Faculty of Health, Islamic Azad University-Tehran Medical Branch, Tehran, Iran; ³Faculty of Engineering, Islamic Azad University-Tehran, Tehran, Iran

10.1136/archdischild-2014-307384.730

Background and aims Nutrients are established as dietary risk factors for cardiovascular disease (CVD), but dietary patterns may be a better predictor of CVD risk. This study was conducted to identify dietary patterns and evaluated their association with biochemical blood profiles and body weight among 400 adults with type 2 diabetes mellitus aged between 40–60 years.

Methods Biochemical blood profiles, anthropometric measurements, and dietary data were obtained. Food frequency questionnaire were used to derive dietary patterns. Factor analysis was conducted to ascertain the dietary patterns, and analysis of covariance was fitted to assess the relation between blood profiles, body weight and adherence to dietary patterns.

Results Three dietary patterns by factor analysis were identified, Vegetable and Poultry, Western and Mixed. After control for potential confounders, waist circumference ($b = -0.12$, $p < 0.01$) and body mass index ($b = -0.15$, $p < 0.02$) were negatively associated with vegetable and poultry dietary pattern. Conversely, total cholesterol ($\beta = 0.14$, $p < 0.008$) and fasting blood glucose ($b = 0.12$, $p < 0.01$) were positively associated with western dietary pattern. A dietary pattern labelled as mixed pattern was found to be positively related to HDL-cholesterol ($b = 0.16$, $p < 0.002$) and body mass index ($b = -0.18$, $p < 0.01$). Associations between mixed pattern, LDL-cholesterol ($b = -$