

## Abstrakt

Type 1 diabetes mellitus (DM1T) is a chronic autoimmune disease that leads to progressive loss of pancreatic  $\beta$ -cells. The incidence of this disease is effected by genetic factors and external environment. One of the possible non-genetic factors associated with the risk of DM1T is vitamin D deficiency. The purpose of this bachelor thesis was to determine the possible connections between serum levels of glycated hemoglobin-HbA1c and 25OH Vitamin D in pediatric and adult patients of the Clinic of Pediatric and Adolescent Medicine and 3rd Medical Department of the 1st Faculty of Medicine Charles University and General Fakultý hospital in Prague with diagnosis of diabetes mellitus 1. The group consisted of 57 patients: 17 pediatric patients with DM1T, 20 adult patients with DM1T and a control group of 20 adult patients with DM2T. Patients were randomly assigned to regular checkups as part of ongoing clinical examination. Serum levels of 25-OH vitamin D <10 ng/ml were evaluated as deficient, 10-30 ng/ml as insufficient and 30-80 ng/ml is sufficient. The results showed that vitamin D insufficiency occurs in all groups of the monitored patient population. The mean value of 25OH Vitamin D (25(OH)D) was  $18.01 \pm 5.23$  ng /ml in DM1T pediatric patients,  $20.15 \pm 10.83$  ng /ml in adult patients with DM1T and  $17.88 \pm 11.16$  ng / mol. Mean values of glycated hemoglobin in children with DM1T correspond to impaired metabolic compensation of diabetes  $72.71 \pm 19.99$  mmol /mol, in adult DM1T and DM2T patients  $59.43 \pm 15.93$  mmol/mol and  $56.55 \pm 21.56$  mmol/mol respectively and showed unsatisfactory metabolic control. Adult patients with DM1T and vitamin D deficiency have a longer duration of illness (23.5 years on average) and patients with a sufficient 25(OH)D of shorter disease duration (8.4 years on average). Adult patients with DM2T with deficient and insufficient vitamin D have a longer duration of illness (on average 12.2 and 11.5 years) and with a sufficient level of 25(OH)D the smaller duration of the disease (1.0 years on average). Our pilot study has its limitations, since the available data set was statistically small. Due to low determinations, the linear dependence of serum glycated hemoglobin and day-insulin dose in serum vitamin D in DM1T pediatric patients and adult patients with DM1T and DM2T was not confirmed. Our results show a certain tendency of dependence serum vitamin D on the duration of the disease. In conclusion, the lack of 25(OH)D is present in all children and most adults with DM1T in our patient population. For statistical confirmation, it would be necessary to verify our results for larger numbers of patients.

Key words: diabetes mellitus, vitamin D, glycated hemoglobin

