# Vitamin D levels and relations with clinical and laboratory findings in children with newly diagnosed type 1 diabetes

Gülay Karagüzel Mustafa Çölkuşu Ebru Bulut Özge Turan İrem Demirci

Karadeniz Technical University, School of Medicine, Department of Pediatric Endocrinology, Trabzon, TURKEY

## Objectives

Vitamin D deficiency (VDD) is common in the general pediatric population of the world. Some studies reported that low vitamin D levels with an increased risk of diabetes.

VDD can be more common in children with type 1A diabetes (DM1A) than those with type 1B diabetes (DM1B). To evaluate 25-hydroxy vitamin D (25OHD) levels in children with newly-diagnosed DM1A and DM1B patients and investigate any relation with clinical and laboratory data at diagnosis.

## Methods

Forty-five children (25 girls) with newly-diagnosed DM1 were included in the study. Levels of 25(OH)D, hemoglobin A1c (HbA1c), venous pH and bicarbonate, diabetes-related autoantibodies (islet autoantibody, GAD65, and IAA) were measured at diagnosis. VDD was defined as 25(OH)D level <15 ng/ml. Serum 25(OH)D were assessed by high-performance liquid chromatography.

Table 2: Laboratory characteristics of the patients with DM1A and DM1B.

| | DM1A N= 33 | DM1B N= 12 | p |
|---|---|---|---|
| HbA1c (%) | 11.1±2.0 | 13.4±3.0 | 0.003* |
| 25(OH)D (ng/ml) | 14.9±12.3 | 22.5±22.2 | >0.05 |
| pH | 7.26±0.16 | 7.34±0.07 | >0.05 |
| $HCO_3$(mEq/l) | 16.3±7.1 | 20.5±5.6 | 0.045* |

*Statistically significant

## References

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## Results

Mean±standard deviation 25(OH)D levels were 17.0±15.7 ng/ml and age was 8.4±4.3 years. The frequency of VDD was 56%. No gender and age differences were noted between the vitamin D deficient (n= 25, 65% girls) and non-deficient children. In those with VDD had lower pH and bicarbonate than that of non-deficient ($p<0.05$; Table 1). The majority of the children (73%) were diabetes-related autoantibody positive (DM1A) and 27% was negative (DM1B). 25(OH)D levels were 14.9±12.3 ng/ml in DM1A patients and 22.5±22.2 ng/ml in DM1B patients ($p>0.05$). HbA1c was lower in DM1A patients than DM1B patients (11.1±2.0 vs 13.4±3.0; $p<0.01$; Table 2). There was no correlation between 25(OH)D and HbA1c or age.

Table 1: Characteristics of the patients with DM1 who were vitamin D deficient and sufficient.

| | Vitamin D deficient n= 25 | Vitamin D sufficient n= 20 | p |
|---|---|---|---|
| Age (years) | 7.8±4.5 | 8.9±4.1 | >0.05 |
| HbA1c (%) | 11.4±2.2 | 12.1±2.8 | >0.05 |
| 25(OH)D (ng/ml) | 8.9±4.1 | 27.0±18.9 | 0.000* |
| pH | 7.23±0.17 | 7.35±0.08 | 0.047* |
| $HCO_3$(mEq/l) | 14.8±7.5 | 20.6±4.7 | 0.015* |

*Statistically significant

## Conclusions

Vitamin D deficiency is common at onset of DM1 patients. Although we did not establish significantly decreased 25(OH)D levels in children with DM1A when compared with DM1B, we did establish that more severe clinical presentation in patients with VDD.

It is obvious that should be avoided vitamin D deficiency in children at risk of developing diabetes.

Supplements of vitamin D can improve insulin sentitivity in patients with DM1.

Nothing Disclosure



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