Thyroid Dysfunction and Thyroid Autoimmunity in Children with New-Onset Diabetes Mellitus

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Introduction

Type 1 DM (T1DM) are related with other autoimmune disorders. Approximately 25% of patients with T1DM are diagnosed with another autoimmune diseases (AID) such as Hashimoto thyroiditis, Celiac disease, Graves disease, Addison disease, vitiligo, autoimmune hepatitis, myasthenia gravis, and pernicious anemia.1 The most common AIDs were thyroiditis (24%), gastrointestinal (6%), and collagen vascular diseases (2%).2 The prevalence of thyroid dysfunction is higher in patients with diabetes mellitus than general population.3 T1DM and autoimmune thyroid disease share T-lymphocyte mediated immunity, and T-cell infiltration results in dysfunction of the target organ, the pancreatic islet in T1DM and the thyroid in autoimmune thyroid disease.4 This study was performed to evaluate the prevalence and risk factors of thyroid dysfunction and autoimmune thyroiditis in children with newly developed diabetes mellitus.

Subjects and Methods

We reviewed medical records from 2002 to 2018, retrospectively. The subjects with T1DM and followed for more than 6 months between 2002 and 2018 in a single tertiary center were included in the study. Total one hundred thirty-four patients were diagnosed as having DM at the Department of Pediatrics, Dankook University Hospital. Thirty-one patients who undertook the first TFT at another hospital or performed TFT more than 3 days later after the diagnosis of DM were excluded from the study. A total of 103 patients were included in the study. Sex, onset, age, HbA1c, presence of diabetic ketoacidosis (DKA) or thyroid dysfunction, positivity of T1DM-associated antibody (Ab) such as anti-GAD, anti-insulin, and anti-IA2 Ab as well as thyroid autoantibody such as anti-thyroid peroxidase (TPO) and anti-thyroglobulin (TG) Ab were analyzed to find the prevalence and risk factors of thyroid dysfunction and thyroid autoimmunity at the onset of DM. Chi-square, Fisher’s exact test, t-test, and logistic regression were used for statistics.

Results

This study showed that low T3 or low T4 was frequently observed at the onset of T1DM and was significantly associated with presence DKA. Thyroid autoimmunity was more common in T1DM compared to T2DM, but there was no association between any DM-associated autoantibody and the positivity of thyroid-specific anti-TPO or anti-TG autoantibody in the patients with new-onset T1DM.

References