中文題目：起初表現為葛瑞夫茲氏病和糖尿病前期並且進展為第一型糖尿病的第二型自體免疫多內分泌腺體症候群

英文題目：Autoimmune polyendocrine syndrome type 2 with initial presentations of Graves' disease and prediabetes developing into type 1 diabetes mellitus

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Introduction: Autoimmune polyendocrine syndromes (APS) are defined as the presence of autoimmune–mediated destructions of two or more endocrine glands. These syndromes can be categorized as two major types (APS-1 and APS-2), with the prevalence of APS-2 estimated at 1.4 to 2 cases per 100,000 inhabitants, occurring most commonly in women at the age of 30 to 40 years. APS-2 is defined by the presence of Addison's disease with autoimmune thyroid disease and/or type 1 diabetes mellitus, and Addison's disease is the first presentation of endocrine dysfunction in about 50% of APS-2. Here we report a case of APS-2 with initial manifestations of Graves' disease and pre-diabetes later developing into type 1diabetes mellitus.

Case presentation: A 51-year-old female presented to the emergency department due to progressive weakness for 2 weeks along with polydipsia, polyuria, and vomiting. Her body weight decreased from 59 to 46 kilograms in recent months. She was diagnosed with Graves' disease back in 2012 with regular medication. In addition, prediabetes was diagnosed also in 2012 based on a HbA1c at 6.4%, and subsequent follow-up of HbA1c levels were within the range of 5.3-6.1%. Her body mass index was 18.6 kg/m^2. Laboratory data revealed severe hyperglycemia (775mg/dL) and ketonemia (7.7 mmol/L) with mild metabolic acidosis (pH=7.246, $HCO3^-$=16.0 mmol/L). Because of her newly developed diabetes mellitus (HbA1c 13.5% at admission) complicated with ketoacidosis, we tested for her islet autoantibodies including GAD (glutamic acid decarboxylase) antibody and IA-2 (islet antigen 2) antibody. The results showed highly elevated figures on both aforementioned tests (GAD antibody > 2000U/mL, and IA2 antibody > 4000U/mL); thus, type 1 diabetes was diagnosed. Coritsol level was also tested, which was within normal range (16.91 μg/dL). Under intensive insulin administration and hydration, her DKA soon resolved and she was discharged with basal-bolus regimen of insulin therapy.

Discussion: The patient falls into type 2 APS, manifesting with autoimmune thyroid disease and type 1 diabetes but with no evidence of Addison's disease at present. Surprisingly, her diagnosis of type 1 diabetes was preceded by prediabetes for 9 years. In clinical practice, islet autoantibodies are not routinely tested in patients with prediabetes, even if autoimmune thyroid disease was present at the same time. However, the staging of presymptomatic type 1 diabetes has been proposed in the recent decade, suggesting to test for islet autoantibodies(GAD65, IA-2, and/or ZnT8) in at-risk individuals to prevent the development of potentially life-threatening DKA. The reasoning being that the detection of two or more islet autoantibodies increases the rate of progression to symptomatic type 1 diabetes, with a lifetime risk approaching 100%.

Conclusion: This case highlighted the importance of testing for islet autoantibodies to facilitate early diagnosis of type 1 diabetes, especially in patients presenting with both autoimmune thyroid disease and prediabetes but with no risk factors for type 2 diabetes.