Case Report

Membranoproliferative glomerulonephritis associated with type 1 diabetes mellitus and Hashimoto’s thyroiditis

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Introduction

A wide spectrum of primary glomerular diseases may occur in patients with type 1 diabetes mellitus (DM) due to autoimmune mechanisms [1,2]. We here report a patient with type 1 DM and Hashimoto’s thyroiditis who developed membranoproliferative glomerulonephritis (MPGN).

Case

A 35-year-old man with type 1 DM for 18 years and Hashimoto’s thyroiditis for 6 years was referred to the renal unit with oedema. He was on insulin, ACE inhibitor and thyroxine replacement with well controlled blood glucose, blood pressure readings and normal thyroid function. On admission, blood pressure was 160/100 mmHg. There was 4 (+) pretibial oedema. Fundoscopic examination was normal. Urinalysis showed marked proteinuria (3.7 g/day) with eight erythrocytes and six leucocytes under the microscope. Laboratory studies revealed a haemoglobin of 12.3 g/dl, an ESR of 35 mm/h, a BUN of 22 mg/dl, a serum creatinine of 1.0 mg/dl, and albumin of 2.1 g/dl. His cholesterol and triglyceride levels were high. Further work-up showed a normal renal ultrasound, low C3 and C4 titres and negative immunological screen with negative hepatitis serology. A percutaneous renal biopsy showed sclerotic glomeruli, glomeruli with capsular drop lesions, interstitial fibrosis and tubular atrophy along with mesangial hypercellularity and mesangial expansion with duplication of basement membranes which were characteristic for MPGN. On immunofluorescence, deposits of IgG, IgM and C3 were observed.

The patient was treated with monthly pulses of cyclophosphamide (1 mg/kg). After 6 months of treatment, there was a remarkable decrease in daily protein excretion (0.8 g/day), and an increase in serum albumin (3.4 g/dl) with stable serum creatinine levels.

Discussion

Renal disease in patients suffering from type 1 DM for over 10 years is usually the result of diabetic nephropathy. However, simultaneous presence of non-diabetic renal disease may be seen in up to 28% of patients [3]. The detection of superimposed glomerular disease may have both therapeutic and prognostic importance. Chihara et al. [4] showed that among 164 diabetes patients who had undergone renal biopsy, 36 had various types of glomerular disease. Diabetic patients with MPGN in this cohort had a shorter renal survival time (9.0±6.1 years) compared with diabetic patients with other glomerular diseases (13.3±7.1 years) or without any glomerular disease (17.5±6.1 years) [4]. Several other cases with diabetes and MPGN were reported but none had therapeutic or prognostic implications [1,3–6]. The renal histopathology in this particular patient has clearly documented a superimposed MPGN on lesions of diabetic nephropathy and nephrotic syndrome was resolved with cytotoxic treatment. The poor prognosis of superimposed MPGN in diabetic patients makes a timely diagnosis critical for renal survival.

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There is a well recognized association between type 1 DM and autoimmune thyroid diseases [2]. The occurrence of thyroid autoantibodies was significantly higher in diabetic patients compared with controls [7]. Furthermore, the presence of another autoimmune disease in diabetic patients was correlated with hypothyroid Hashimoto’s thyroiditis [8]. In the present
case, there was Hashimoto’s thyroiditis with anti-TPO positivity and hypothyroidism requiring thyroxine replacement. It has been suggested that immune complexes mediated by thyroid constituents may cause secondary glomerulonephritis [9]. An association between type 1DM, Hashimoto’s thyroiditis and minimal change disease has already been reported [10]. Given the autoimmune links between diabetes and Hashimoto’s thyroiditis, the development of MPGN is not surprising and suggests a common pathogenesis.

In summary, this first case with type 1DM, Hashimoto’s thyroiditis and superimposed MPGN has a major clinical implication. In patients with clinical and laboratory characteristics inconsistent with the natural history of diabetic nephropathy, a thorough scrutiny is warranted for detection of non-diabetic renal disease, some of which may have therapeutic and prognostic significance.

Conflict of interest statement. None declared.

References


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