Case Report

Membranoproliferative Glomerulonephritis Associated with a Human Immunodeficiency Virus Infection

Abstract

Type 1 membranoproliferative glomerulonephritis (MPGN) is an uncommon manifestation of human immunodeficiency virus (HIV)-associated renal disease in patients coinfected with hepatitis C virus. We report a case of MPGN characterized by nephrotic syndrome associated with HIV without hepatitis C coinfection. The patient had a favorable response to highly active antiretroviral therapy and angiotensin-converting enzyme inhibitors. Recognition of the MPGN lesion in HIV infection devoid of hepatitis C coinfection must be considered.

Keywords: *Highly active antiretroviral therapy, Human immunodeficiency virus, membranoproliferative glomerulonephritis, nephrotic syndrome*

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Introduction

Type 1 membranoproliferative glomerulonephritis (MPGN) is a pattern of injury characterized by mesangial and endocapillary proliferation, double contours along the capillary walls, and lobular accentuation of the capillary tufts. It may be primary/idiopathic or secondary. The secondary causes include infections, autoimmune diseases, and paraproteinemias.[1] We report a case of MPGN in a human immunodeficiency virus (HIV)-infected individual with rapid remission with antiretroviral therapy.

Case Report

A 52-year-old man presented with lower limb edema and hypertension. His past medical history was notable for appendicectomy in 1995 and hypertension since 1 year treated with ramipril 5 mg daily. On admission to hospital, he was hypertensive (blood pressure 160/95 mmHg) and had peripheral edema. There was no rash and no peripheral lymphadenopathy.

Laboratory results were as follows: serum albumin 17 g/L, serum protein 51 g/L, 7 g proteinuria from a 24 hr collection, and hematuria 2 × 10^5/ml, normal electrolytes, serum creatinine: 88 µmol/L, C-reactive protein: 1 mg/L, hemoglobin: 11.3 g/dl, white cell count: 3.7 × 10^9/L, platelet count: 162 × 10^9/L, neutrophil count: 1 × 10^9/L, and lymphocytes count 2 × 10^9/L. Tests for autoantibodies including antinuclear antibody, anti-DNA were negative. Serum C3 complement was 0.88 g/L and C4 was 0.22 g/L. Serum protein electrophoresis showed polyclonal hypergammaglobulinemia. Kidney ultrasound revealed normal sized kidneys (right 11.5 cm and left 11 cm) without structural abnormalities.

A kidney biopsy was performed. Light microscopy revealed 18 glomeruli showing diffuse and global endocapillary proliferation, mesangial matrix expansion, massive subendothelial deposits, and double contours of glomerular capillary wall on silver stain. There was moderate interstitial inflammation. Immunofluorescence microscopy disclosed IgG, C3, and C1q reaction along the mesangium and the peripheral segments of the glomeruli. Type 1 MPGN's diagnosis was rendered. Hepatitis B surface antigen, hepatitis C antibodies, and cryoglobulins were negative. HIV 1, 2 antibodies screening by ELISA was twice positive. Western blot essay was positive for GP120, GP41, GP160, P17, P24, P31, P55, and P66. Viral load by polymerase chain reaction was 200 copies/ml.

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The patient was treated with furosemide 40 mg daily, ramipril 5 mg daily, simvastatin 20 mg daily, and antiretroviral therapy including lamivudine 150 mg twice daily, zidovudine 300 mg twice daily, and efavirenz 600 mg daily. After 8 weeks, the edema resolved, viral load decreased to 46 copies/ml, 24-h protein decreased to 0.5 g/24 h, and serum albumin increased to 35 g/L.

Discussion

HIV could engender many types of kidney disease. It has been proved that common HIV-associated nephropathy is the most specific renal lesion although other nephropathy such as thrombotic microangiopathy and immune complex-mediated glomerulonephritis can be found in HIV-positive patients.[2] We report a case of MPGN characterized by severe nephrotic syndrome associated with HIV infection.

Type 1 MPGN is an unusual manifestation of HIV-associated renal disease.[3] Most of the time Type 1 MPGN is related to hepatitis C and B coinfection.[3,4] Our patient did not have any coinfection or comorbidity typically associated with MPGN. He was asymptomatic and had no sign of opportunistic infections. Unfortunately, the detection of HIV antigens by immunofluorescence and electron microscopy could not be achieved. Two other cases of MPGN and HIV without hepatitis C coinfection, in addition to the present one, have been reported.[3,5]

Patients suffering from HIV-associated renal diseases look like to benefit from treatment with angiotensin-converting enzyme inhibitors (ACEIs), glucocorticoids, and antiretrovirals.[6,7]

We started a treatment with highly active antiretroviral therapy (HAART) and an ACEI without an immunosuppressive agent; and proteinuria regressed at the 8th week of follow-up. Simi Shahabdeen *et al*. reported a patient who achieved a rapid remission with a high dose of oral steroids and ACEI without HAART.[5]

Conclusion

Type 1 MPGN associated with HIV infection has been reported almost exclusively with hepatitic C coinfection. Due to the temporal association of treatment and renal disease resolution, the MPGN was presumed to be secondary to HIV infection.

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Conflicts of interest

There are no conflicts of interest.

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