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Case Report

Necrotizing arteritis in a human immunodeficiency virus-infected patient with lupus-like glomerulonephritis

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Abstract: Human immunodeficiency virus (HIV)-associated lupus-like glomerulonephritis (GN) is a chronic immune complex disease occurring in HIV-infected patients. Although the light, immunofluorescence, and electron microscopy findings indicate features of lupus nephritis, no evidence of systemic lupus erythematosus (SLE) is observed in the affected patients. We present the case of a 45-year-old Caucasian woman with HIV infection who was admitted to the hospital with a nephrotic syndrome 10 years after the HIV diagnosis. A renal biopsy revealed HIV-associated lupus-like GN and necrotizing arteritis affecting two interlobular arteries. Necrotizing arteritis is a type of renal vasculopathy associated with SLE, but has not been reported previously in HIV-associated lupus-like GN. In this case, necrotizing arteritis was found to be a histological feature common to both HIV-associated lupus-like GN and SLE. This histological finding reinforces the resemblance between HIV-associated lupus-like GN and nephritis caused by lupus.

Keywords: HIV, glomerulonephritis, necrotizing arteritis

Introduction

Human immunodeficiency virus (HIV)-associated lupus-like glomerulonephritis (GN) is a chronic immune complex disease occurring in HIV-infected patients. Although the light, immunofluorescence, and electron microscopy findings indicate features of lupus nephritis, no evidence of systemic lupus erythematosus (SLE) is observed in the affected patients. The pathogenesis of this condition is not completely understood, but it may be related to an altered immune system or the direct effect of the virus on renal tissue [1]. In this case, necrotizing arteritis was found to be a histological feature common to both HIV-associated lupus-like GN and SLE. Despite vascular lesions including necrotizing arteritis being not rarely found in SLE patients, no report of vascular lesions in patients with HIV-associated lupus-like GN has been published thus far.

Case apresentation

A 45-year-old white woman was diagnosed with HIV infection and followed up for 10 years thereafter. She was subsequently admitted to our hospital with a 4-week history of progressive asthenia, edema of the lower limbs and face, reddish-colored urine, and weight gain of 10 kg. Laboratory tests revealed a hemoglobin level of 4.2 g/dL, white blood cell count of 15000/mm^3, platelet count of 308.000/mm^3, albumin level of 1.6 mg/dL, serum creatinine (SCr) level of 0.9 mg/dL, and positive direct Coombs test result. A urinalysis showed 2+ protein and a red cell count of 150-200/high-power field, and 24-hour urine collection revealed 6.10 g of protein. Tests for detection of Treponema pallidu and hepatitis C virus were negative. Hepatitis B virus screening shows serum antibodies against core protein (anti-HBC), but without surface antigen (HBsAg). The HIV viral load was 13.326 copies/mL, and the CD4-positive lymphocyte count was 148 cells/mm^3. Her serum tested negative for antibodies-antinuclear, anti-native DNA, anti-SM, and anti-RNP, and the C3 and C4 levels were in the normal range.

A renal biopsy performed subsequently showed the presence of eight glomeruli with endocapil-

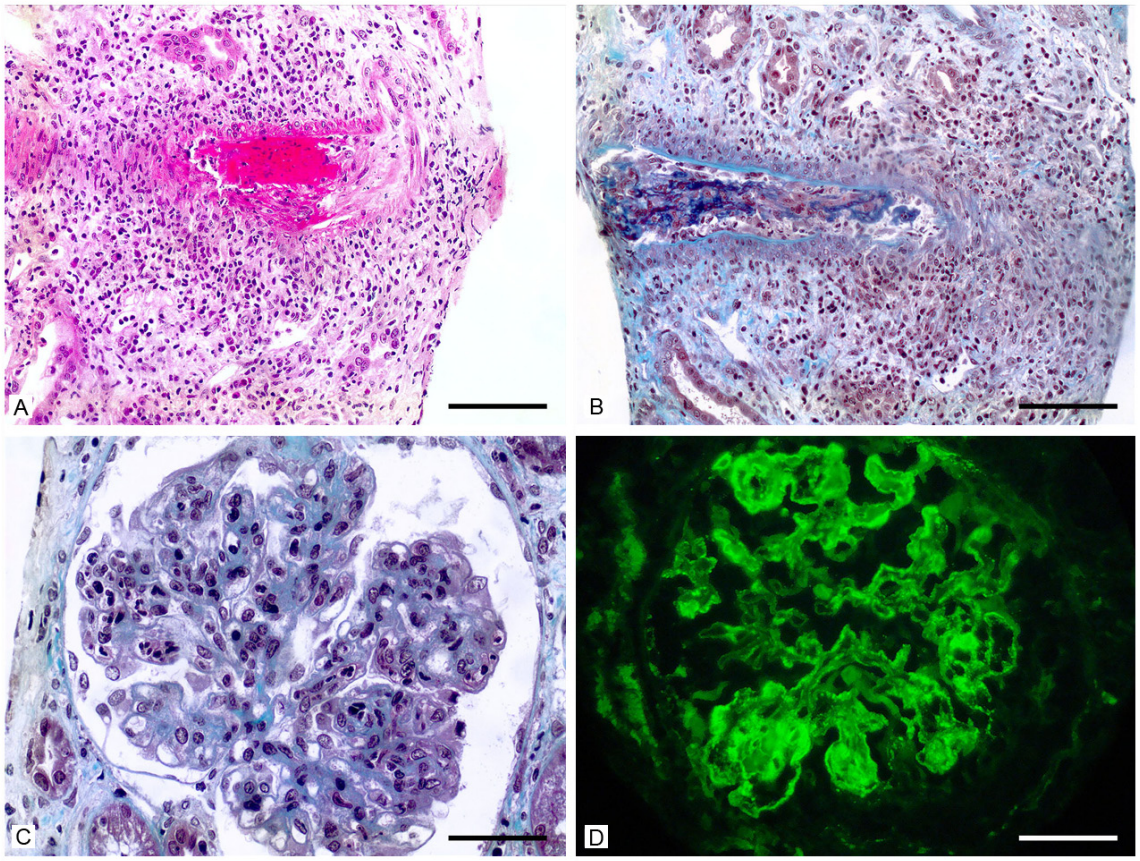

Figure 1. Artery with transmural fibrinoid necrosis and inflammatory infiltrate of neutrophils and lymphocytes (A: Hematoxylin and eosin; B: Masson's trichrome). Glomerulus reveals striking hypercellularity with numerous neutrophils (C: Masson's trichrome). Immunofluorescence for C1q shows global granular capillary wall and mesangial (D). Bar=50 μm.

lary and mesangial proliferation and inflammatory cell infiltration. Crescents and wire loop deposits were present in three glomeruli. Two arteries showed transmural inflammatory processes, occlusion of the vascular lumen by endothelial proliferation, and fibrin deposition (**Figure 1**). Immunofluorescence studies showed a diffuse, coarsely granular glomerular capillary and mesangial fluorescence for IgA, IgG, IgM, C3, and C1q. Therefore, the patient was diagnosed with immune complex-mediated GN with lupus-like features.

Highly active antiretroviral therapy (HAART) -zidovudine, lamivudine, ritonavir, and atazanavir -associated with inhibitor of angiotensin converting enzyme was initiated. Three months after admission, the patient achieved complete remission of the initial symptoms and her laboratory values resumed to normal levels (SCr level, 0.71 mg/dL; urea level, 30 mg/dL; hemoglobin level, 9.4 g/dL, and 24 h proteinuria level, 349 mg).

Discussion

Abnormal kidney function is reported in up to 30% of HIV-infected patients [2]. The characteristic lesion of HIV-associated nephropathy (HIVAN) is collapsing focal segmental glomerulosclerosis, which accounts for over 60% of the HIVAN cases [3]. However, the occurrence of immune complex-mediated forms of GN is being increasingly reported [1, 4].

The relationship between HIV infection and GN is currently unclear. HIV infection is related to polyclonal hypergammaglobulinemia, which can foment the circulating immune complexes [1]. Some renal lesions that seen in patients with HIV infection may be associated with the presence of another infection (such as hepatitis C virus), but this was not the case in our patient.

One form of GN that has been described in HIV-infected population is the immune complex GN

with lupus-like histologic features, which is defined by the presence of "full house" glomerular immunoglobulin and complement deposits (IgG, IgA, IgM, C3, and C1q) without clinical findings or serologic markers of SLE. Light microscopy has previously revealed a broad spectrum of findings characterized by diffuse or focal proliferative GN, crescents, necrotizing injury, wire-loops, spiky membranous nephropathy, tubular injury, microcysts filled with periodic acid-Schiff-positive casts, edema, and inflammatory infiltrate of the interstitium [5-10]. Electron microscopy revealed large subendothelial, intra-membranous, subepithelial and mesangial deposits [6]. These lupus-like lesions may represent a renal-limited form of SLE [11].

Although renal vascular complications are often encountered in SLE [12], in HIV-related lupus-like GN, the arteries and arterioles do not usually show conspicuous changes [7, 9]. An exception was the report by Haas et al. [5] in which a review of 14 pathology reports of renal biopsy specimens from HIV-positive patients showed that two patients had vascular involvement that showed focal changes of thrombotic microangiopathy with focal fibrin thrombi and red blood cell fragments within glomeruli and preglomerular arterioles.

Besides thrombotic microangiopathy, renal vasculopathies in SLE include vascular immune complex deposition, noninflammatory necrotizing vasculopathy, and true renal vasculitis. Our current patient had necrotizing arteritis affecting two interlobular arteries; this vascular lesion is uncommon in SLE patients. The vessels usually affected are small and medium-sized arteries, most commonly interlobular arteries, characterized by mural inflammatory cell infiltration in the acute phase by fibrinoid necrosis [12].

To date, only a few studies have reported the treatment of patients with HIV-associated lupus-like GN. Among them, a United States of America (USA) multicenter cohort showed that HAART did not stop the progression of non-HIVAN kidney disease [13]; however, a few other studies showed a good response to HAART treatment alone [8, 14] or combined with steroids [9]. With regard to our patient, the renal disease improved with antiviral therapy alone.

Conclusion

To our knowledge, necrotizing arteritis in a patient with HIV-associated lupus-like GN has not been reported thus far. This histological finding reinforces the resemblance between HIV-associated lupus-like GN and nephritis caused by lupus.

Disclosure of conflict of interest

The authors have declared that no conflict of interests exist.

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