Case of a Rarely Encountered Membranoproliferative Glomerulonephritis:Hepatitis C Associated Cryoglobulinemic Vasculitis

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Cryoglobulinemic vasculitis (CV) is an autoimmune disorder affecting small blood vessels, often triggered by chronic infections such as Hepatitis C virus (HCV). This condition manifests with diverse clinical features, such as purpuric skin lesions, arthralgia, and kidney involvement, which may present as membranoproliferative glomerulonephritis (MPGN).[1,2]

A 66-year-old female patient with a history of coronary artery bypass surgery, hypertension, and coronary artery disease was referred to our hospital with complaints of proteinuria, facial and leg swelling, and elevated creatinine levels. She also reported fatigue and weight loss. Upon admission, blood pressure was 170/100 mm Hg, and physical examination revealed bilateral 3 positive pretibial edema with brown reticular purpuric rashes on her legs (Figure 1). Informed consent was obtained from the patient for the publication of this case report.

Laboratory findings indicated serum urea of 74 mg/dL, creatinine of 2.6 mg/dL, and albumin of 2.2 g/dL. The baseline creatinine level was 1.2 mg/dL. Urinalysis revealed 3 positive protein and 3 positive erythrocytes, with 3765.5 mg/g/day protein. In the differential diagnosis, IgA nephropathy, MPGN, C3 glomerulopathy, lupus nephritis, IgA vasculitis, ANCA-associated glomerulonephritis, and infection-related glomerulonephritis were considered. Diagnostic work-up revealed normal serum C3 level (0.93 g/L) and low C4 level (0.06 g/L), negative anti-ds-DNA, negative MPO-ANCA and PR3-ANCA, negative hepatitis B and HIV serology, positive HCV serology, positive cryoglobulins, and high IgM levels (2277.8 mg/dL). Hepatitis C virus-RNA was detected at 86 million copies IU/mL.

Due to her positive HCV serology, elevated creatinine levels, positive cryoglobulin results, and low C4 levels, hepatitis C-associated cryoglobulinemic vasculitis (HCV-CV) and acute kidney injury were considered. The patient started on a 3-day course of 1 g intravenous (IV) pulse steroids, 1 g IV cyclophosphamide, and 1 g IV rituximab, and she received 5 sessions of plasmapheresis. Antiviral therapy was initiated with Maviret (glekaprevir + pibrentasvir). Skin and renal biopsies and renal ultrasound were also performed for further investigations.

Figure 1. Reticular purpuric rashes.

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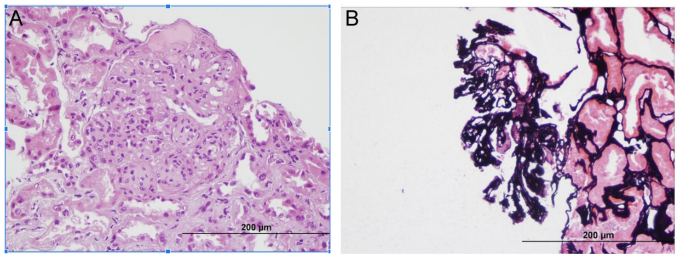

Figure 2. (A) A glomerulus showing endocapillary and mesangial proliferation, hematoxylin & eosin, ×00. (B) A glomerulus showing segmental basement membrane duplication, methenamine silver, ×400.

Skin biopsy showed perivascular lymphocytic and histiocytic infiltration in the dermis. Direct immunofluorescence did not show any IgA, IgG, IgM, C3, or fibrinogen deposits in the epidermis or dermis. Renal ultrasound revealed atrophy in the left kidney with increased parenchymal echogenicity, while the right kidney appeared normal. Renal biopsy showed limited renal cortex. Endocapillary and mesangial proliferation and glomerular basement membrane duplication were seen in the present 3 glomeruli (Figure 2A and B). Immunofluorescence microscopy showed IgG, IgA, IgM, C3, Kappa, and Lambda staining of varying intensity (IgG, IgA, Kappa, and Lambda: trace; IgM and C3: ++/+++).

Her latest serum creatinine and proteinuria values were 3 mg/dL and 8962.2 mg/g/day, respectively, and she is currently receiving 35 mg/day of prednisolone.

Hepatitis C-associated cryoglobulinemic vasculitis, particularly with the MPGN pattern, is a very rare condition; a study analyzing 9836 kidney biopsies found that only 33 cases of HCV-CV had an MPGN pattern.[3]

Antivirals alone are not effective in treating this condition; studies revealed that relapses can occur due to many factors like complement activation, RF persistence, or B-cell proliferation, so immunosuppressives like glucocorticoids, rituximab, and plasmapheresis must be added to treatment regimes when necessary.[4,5]

Availability of Data and Materials: The data that support the findings of this study are available on request from the corresponding author.

Informed Consent: Written informed consent was obtained from the patient who participated in this study.

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