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What's the diagnosis?

A 59 year-old woman with Hepatitis C cirrhosis presented with worsening ascites and acute kidney injury with serum creatinine 3.5 mg/dL (baseline 0.8 mg/dL). Urinalysis was positive for hemoglobin and protein, along with 35 red blood cells and 15 white blood cells per high power field. Urine protein/creatinine ratio was 1.7. Urine sediment showed red blood cell casts. C3 and C4 levels were 22 mg/dL and 3 mg/dL respectively. Rheumatoid factor and serum cryoglobulin were weakly positive. Hepatitis C viral load was notably elevated (>10,000,000 IU/mL). All other serologies were negative. Kidney biopsy demonstrated IgG, IgM, and C3 deposition on immunofluorescence microscopy and signs of membranoproliferative glomerulonephritis (MPGN) on light and electron microscopy. The patient was diagnosed with immune complex-mediated MPGN associated with Hepatitis C. The patient was started on ledipasvir/sofosbuvir daily with plan to continue the course for 12 weeks. However, the patient died from complications of gastrointestinal bleeding 1 week after initiation of treatment.

Urine sediment showed red blood cell casts (Figure 1). Light microscopy showed increased mesangial and endocapillary cellularity with segmental thickening in the capillary walls (Figure 2). There was diffuse effacement of the foot processes involving greater than 75% of the capillary surface with re-duplication of the glomerular basement membrane (tram-tracking) and sub-endothelial dense deposits on electron microscopy (Figure 3).

Hepatitis C is a common cause of immune complex-mediated MPGN. Patients usually present with hematuria, proteinuria and active urine sediment. Hypocomplementemia is a common finding. The diagnosis is confirmed by electron microscopy and immunofluorescence.

(*Images and text provided by Mohamad Hanouneh, MD, Steven Menez, MD, and Duvuru Geetha, MBBS, MD, Johns Hopkins University, Department of Medicine, Division of Nephrology, Baltimore, Maryland*)