Case Report

Membranous Nephropathy: A Rare Association with Renal Vein Thrombosis

Ankur Mittal[1], Ruchi Gupta[2], Pavneet Selhi[1], Harpreet Kaur[1], Neena Sood[1] and Jasvinder Sandhu[3]

[1]Dept of Pathology, Dayanand Medical College & Hospital, Ludhiana (Pb) India
[2]Dept of Pathology, GMC, Amritsar (Pb), India
[3]Dept of Nephrology, Dayanand Medical College & Hospital, Ludhiana (Pb) India

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ABSTRACT

Background: Thromboembolic events are a known complication of nephrotic syndrome and occur with a frequency varying from 10% to 45% depending upon the underlying disease.

Case Presentation: A 25 year male presented with history of decreased urine output , groin pain and edema lower limbs. Laboratory tests showed Urea 30mg/dL; Creatinine 0.66mg/dL; albumin 2.3g/dL; proteinuria 3+ and negative viral serology. An abdominal ultrasound with Doppler showed features suggestive of partial revascularization. Renal biopsy showed membranous nephropathy.

Conclusion: Our case shows that renal vein thrombosis (RVT) is a complication of membranous nephropathy.

***Corresponding author:**
Dr Ankur Mittal, Flat No 202, Plot No 330R, Rajrajeshwari apartment, Model Town, Ludhiana (Punjab) – 141001, India
Phone: +91 09815494331
E-mail: drankur03@yahoo.co.in

Introduction

Thromboembolic events are a known complication of nephrotic syndrome and occur with a frequency varying from 10% to 45% depending upon the underlying disease.

The renal vein is a classic site for thrombosis in nephrotic patients, being unusual in healthy subjects. Deep vein thrombosis, especially renal vein thrombosis, is reported to occur more frequently amongst patients with membranous nephropathy (MN) than other nephrotic diseases.[1] Dahler et al [2] concluded that, in patients with nephrotic syndrome, the prevalence of DVT is high.

RVT can be unilateral or bilateral; it can extend through inferior vena cava and can be associated with pulmonary embolism. The risk of thrombosis is proportional to the severity of nephrotic syndrome, mainly with serum levels of albumin lower than 2g/dL and proteinuria higher than 10g/day.[3]

The majority of RVT cases are insidious and assymptomatic, usually discovered incidentally or when a workup for the source of pulmonary embolism reveals it. This paper describes a case of membranous nephropathy complicated with RVT.

Case Report

A 25 year old male presented with a history of decreased urine output for ten months associated with groin pain and easy fatigubility. After two month of initial symptoms, he had an episode of hemoptysis. Odema of feet and lower limbs along with dysopnea of NYHA II was also noted for the last 10days. At admission, physical examination was unremarkable other than odema lower limbs and feet. Laboratory tests showed Hemoglobin 15.8g/dL; White blood count 13,700/mm3; INR 1.04; Urea 30mg/dL; Creatinine 0.66mg/dL; K+ 4.02mEq/L; Na+ 140mEq/L; albumin 2.3g/dL and proteinuria 3+. Antinuclear antibodies(ANA) and viral serology were negative. A renovascular duplex ultrasound was performed which showed normal sized kidneys, with maintained echotexture. A patchy flow was seen in right renal vein along with an echogenic material in inferior vena cava suggestive of partial revascularization. (Figure 1). X-ray chest showed the features of right sided pleural effusion.

A renal biopsy was performed. Light microscopy revealed 26 glomeruli all of which were histologically unremarkable. Tubules showed degenerative changes (Figure 2). On immunoflourescence granular IgG deposits were noted along the glomerular capillary loops, compatible with the diagnosis of Early Membranous Nephropathy. (Figure 3).

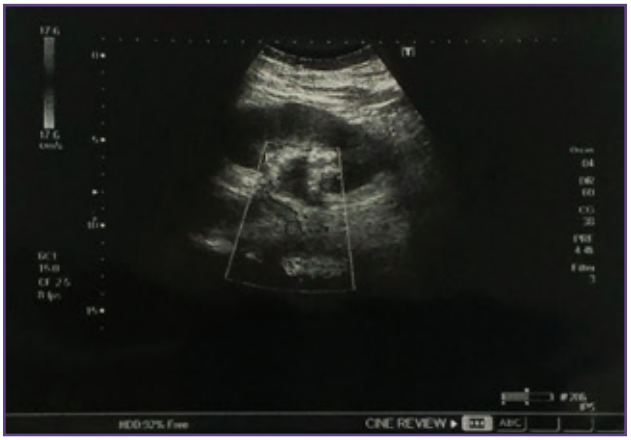

Fig. 1: Right kidney normal in size and shows normal echogenicity. Corticomedullary differentiation is maintained. Renal pelvis is mildly prominent. On color Doppler, renal artery shows normal filling and renal vein shows patchy flow – suggestive of partial obstruction

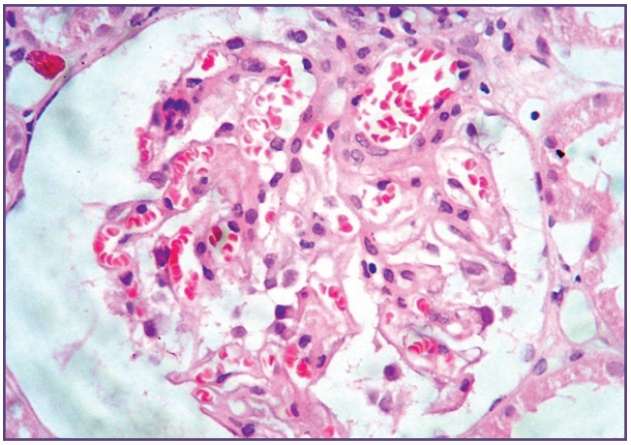

Fig. 2: Light microscopy shows a histologically unremarkable glomerulus (H&E, 400X)

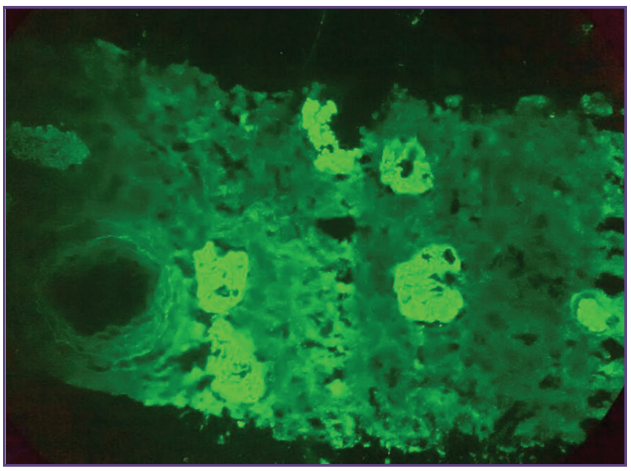

Fig. 3: Immunoflourescence showes granular IgG deposits along the glomerular capillary loops (IF, 400X)

Discussion

The incidence of both venous and arterial thrombosis, is high in patients with nephrotic syndrome than in the general population.[2] The risk of thrombosis varies according to the type of glomerulopathy. It is higher in membranous nephropathy, followed by membranoproliferative glomerulonephritis and minimal change disease.[4] We showed a case of membranous nephropathy complicated by RVT.

Risk factors for thromboembolism in adult patients with nephrotic syndrome are a high urine protein to serum albumin ratio (predictive factor for venous thrombosis) as well as age, hypertension, diabetes and smoking (predictive factors for arterial thrombosis).

The reasons underlying the hypercoagulable state in nephrotic patients are not clearly understood. There is evidence of ongoing subclinical coagulation as the measures of hemostasis activation, such as the level of plasma fibrinopeptide A and D-dimer are increased, Multiple hemostatic abnormalities have been described, including decreased levels of antithrombin and plasminogen (due to urinary losses), increased platelet activation, hyperfibrinogenemia, inhibition of plasminogen activation, and the presence of high-molecular-weight circulating fibrinogen moieties [5].

RVT can be unilateral or bilateral and can extend to inferior vena cava.[6] The course of RVT is more frequently chronic, but acute forms can occur. Although it has been suggested that a chronic RVT may lead to worsening proteinuria or kidney function, this has never been clearly documented [7].

RVT can be asymptomatic[2] or present with symptoms of renal infarction: flank pain, scrotal edema, microhematuria, increased levels of LDH and increase in size of kidneys on ultrasound.[8] Pathologic changes that suggest RVT include vascular congestion (particularly interstitial capillaries), disproportionate interstitial edema and later fibrosis, and vascular thrombosis [9].

Even though, gold standard method for the diagnosis of RVT is renal venography, less invasive procedures like ultrasound with Doppler, magnetic resonance or angiotomography are more frequently used. [10] We preferred to use ultrasound as it is easily accessible and risks of using contrast media are absent.

The role of prophylactic anticoagulation (especially in patients with membranous nephropathy with severe nephrosis) has been debated [11]. A better understanding of the risk of VTE in patients with MN is critical to balance the risks and benefits of prophylactic anticoagulation. [1] Thromboembolic events are a preventable cause of morbidity and mortality in patients with the nephrotic syndrome, especially MN.[12] The treatment of renal vein thrombosis includes anticoagulants and thrombolytic therapy [13].

Patients with RVT should be treated with heparin initially followed by warfarin, as in the cases of pulmonary embolism.[14] Oral anticoagulation is recommended for a period of 6 to 12 weeks and can be prolongated if the patient continues to be symptomatic.[2]

Conclusion

This case highlights that renal vein thrombosis should always be considered in the differential diagnosis of flank pain and hematuria. The diagnosis can be rapidly made with renal venography. A renovascular duplex ultrasound or magnetic resonance angiography can also be performed in patients with renal insufficiency. More importantly, delay in the diagnosis and treatment of renal vein thrombosis can result in significant morbidity, including loss of renal function, extension into the IVC, and pulmonary embolus. Treatment is anticoagulation therapy.

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