Unusual presentation of more common disease/injury

Sudden retinal vein thrombosis in a patient with nephrotic syndrome

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Summary

The authors report a sudden painless blindness in a 42-year-old male with membranous nephropathy of idiopathic origin. He was admitted with a history of decreased urine output and painful abdomen of a 3-day duration in the Department of Nephrology, Sheri Kashmir Institute of Medical Sciences, Srinagar, Kashmir – a tertiary care centre in the state of Jammu and Kashmir, India. On evaluation, he was found to have renal vein thrombosis. On day 3 of admission, he suddenly developed progressive painless blindness. Indirect ophthalmoscopic examination showed retinal vein thrombosis. Patient's clinical condition deteriorated due to his underlying condition and he succumbed to his illness. Renal vein thrombosis as a complication of nephrotic syndrome is well known. To the best of our knowledge, this is the first case of retinal vein thrombosis in the course of nephrotic syndrome.

CASE PRESENTATION

Thromboembolic complications of nephrotic syndrome are very frequent. They can occur in the arterial or venous circulation. Venous thromboses are frequently asymptomatic and are manifested only by pulmonary embolism. Renal vein thrombosis¹ is the most frequent complication of nephrotic syndrome. Reports of thrombosis in cerebral veins,² portal vein,³ etc have been described in the literature. Retinal vein thrombosis is usually caused by

hypertension, diabetes, hyperlipidaemia, and rarely hyper-viscosity syndromes (multiple myeloma, leukaemia) and HIV have been implicated as well.

One year before current presentation, this 42-year-old, obese, non-diabetic male had presented to our clinic with history of abdominal distension and generalised anasarca of 1-month duration. Hailing from a remote area of the Kashmir valley, he was working as a farmer and was a non-smoker with no other comorbidities. He had

Figure 1 Kidney biopsy of the patient.

Figure 2 Retinal vein thrombosis.

proteinuria ranging from 6 to 8 g/l and his kidney biopsy was suggestive of membranous glomerulonephritis (figure 1). All causes of membranous glomerulonephritis were ruled out by appropriate investigations in his first admission. Patient was put on low-protein, low-salt diet, tablet enalapril 5 mg daily. He had been on regular follow-up in our clinic with stable renal disease, as he had no prospectus of renal transplant. Currently, he was admitted to the nephrology services with history of painful abdomen and decreased urine output of a 3-day duration. The abdominal pain was diffuse with no history of constipation or obstipation. He denied history of fever, jaundice, breathlessness or similar history in the past. On examination, he was conscious, oriented, in time place and person and had generalised anasarca. He had normal vital signs and his oxygen saturation on room air was normal too. Abdominal examination revealed ascites, and no organomegaly could be demonstrated by dipping method. He had no ballotable kidneys and there was no bruit on auscultation in the renal and liver area. There was no stigmata of chronic liver disease. His genitourinary examination revealed scrotal oedema with normal testicular volume. His other systemic examination was normal. On evaluation, he had haemoglobin of 9.8 g/dl with normal white cell count and platelet count of 350×10^3 μ /l. His blood urea was 38 g/dl (ref 26–40 mg/dl) and serum creatinine was 1.2 mg/dl (0.8–1.0 mg/dl). He had hypercholesterolaemia (408 mg/dl) and his antinuclear antibody, HIV serology were negative. His 24-h urine collection revealed 6.7 g/l proteins. The ascetic fluid was wide gradient with no spontaneous bacterial peritonitis. Doppler of renal veins revealed right renal vein thrombosis extending to inferior vena cava and CT scan abdomen confirmed it. CT scan showed no evidence of mesenteric vascular thrombosis or bowel ischaemia. Compression ultrasound of leg veins revealed no thrombosis in leg veins.

Low molecular weight heparin was started in therapeutic doses. On day 3, of admission he called the resident on call, with sudden onset of floating spots and flashing lights. This was followed next day by progressive unilateral loss of vision. His visual acuity ranged from 20/20 to finger counting in subsequent 3 days and he was blind in right eye. On indirect ophthalmoscopic examination, he had retinal oedema, superficial haemorrhages, diffuse swelling, cotton wool spots and dilated retinal veins (figure 2). He had complete renal shut down and became acidotic. Haemodialysis was started and he developed a temperature of 38°C. Septic screen revealed white cell count of 21 000 and growth of gram-negative bacteria was documented on blood culture. His urine culture was sterile. Gram-negative bacterial cover was started besides other treatment. Patient's blood pressure began to drop. Echocardiography examination revealed, normal study of the heart with no features of pericardial effusion. He was shifted to intensive care unit and was put on ventilatory support and haemodialysis was continued. However, his condition deteriorated and his blood pressure did not improve on maximum inotropic support. On day 24 of his admission, he had a cardiac arrest from which he could not be resuscitated and was declared dead.

OUTCOME AND FOLLOW-UP

Patient succumbed to his illness.

DISCUSSION

The index case had thrombotic complications of nephrosis in the form of renal vein thrombosis and hitherto unreported retinal vein thrombosis. Studies⁴ have shown that hyperfibrinogenaemia may be a major thrombotic risk factor in nephrosis by inducing more fibrin depositions. There is increase in factor VIII levels, reduced protein C and S levels and impaired thrombolytic activity. Other

factors contributing in the phenomenon may be volume depletion by diuretic use, venous stasis, immobilisation or immune complex activation of the clotting cascade.⁵ Recent discovery of the association of the antienolase autoantibodies with membranous nephropathy may be one of the factors interfering with fibrinolysis.⁶ It is difficult to predict the site of thrombosis in a given case of nephrotic syndrome and retinal vein occlusion is rare. There is no data available in the literature about nephrotic syndrome and central retinal venous occlusion (CRVO). CRVO classically presents with progressive painless visual loss. In addition to the well-known classical risk factors such as hypertension, arteriosclerosis and diabetes, new haemostasis-related ones have been investigated in patients affected by CRVO. Kuhli *et al* observed in a controlled trial of 150 patients with retinal vein thrombosis, that factor XII deficiency was the most prevalent factor in patients under 45 years and the authors concluded that in older people this factor may not be the contributing factor.⁷ In another study from Italy⁸ among 50 cases of retinal vein occlusion, hypercholesterolaemia was the most important risk factor in retinal vein occlusion as hypercholesterolaemia was found in 71.4% of cases in their series hypercholesterolaemia as seen in the index case is found in most of the patients with nephrotic syndrome. Data from Germany⁹ in 220 cases of RVO revealed the presence of resistance to activated protein C, antiphospholipid antibodies and deficiency of the anticoagulant proteins as independent risk factors for the development of retinal vein occlusion among patients younger than 45 years. Authors of the study concluded that thrombophilic disorders are associated with the development of retinal vein occlusion in patients younger than 45 years. There is no established treatment for CRVO. Treatment consists primarily of managing any identified underlying systemic disease. The increasing role of hypercoagulability in patients with CRVO supports the use of antithrombotic drugs¹⁰ in the treatment of this disease. Vitamin treatment to correct hyperhomocysteinaemia should also be taken into consideration. In a recent meta-analysis, use of low molecular weight heparin was associated with improved outcome and less adverse ocular outcomes, however, authors recommended further studies before recommendations are made regarding this issue.¹¹

We conclude that careful surveillance of retinal vein by fundoscopic examination in patients with nephrosis should not be underestimated. There is a need of careful vigil and early start of antithrombotic agents in a given cases of nephrosis.

Learning points

- ▶ Thrombosis in retinal vein is unusual in nephrotic syndrome
- ▶ Use of anticoagulants in nephrotic syndrome with low albumin needs further investigations
- ▶ Fundoscopic examination should not be underestimated in nephrotic syndrome.

Competing interests None.

Patient consent Obtained.

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