

An Asymptomatic Young Female with Chronic Hepatitis-B Presenting as Minimal Change Glomerulonephritis with Nephrotic Syndrome

A. K. Gupta, A. Rohatgi, V. Pardasani, S. K. Sharma, A. K. Dinda*, P. Shakhuja**

Abstract

Hepatitis B is a worldwide problem with high prevalence rate in our country. Kidney involvement is common in chronic hepatitis B patients. The usual pattern is membranous glomerulonephritis in children and Type I membranoproliferative glomerulonephritis in adults. A previously asymptomatic young female suffering from chronic hepatitis B with portal hypertension presented with nephrotic syndrome. Kidney biopsy revealed minimal change glomerulonephritis which is rarely seen in association with hepatitis B. Patient recovered following administration of oral steroids. We recommend screening of all patients of nephrotic syndrome for chronic hepatitis B with viral markers in addition to HBsAg.

Key Words

Hepatitis, Glomerulonephritis, Nephrotic Syndrome

Introduction

Extrahepatic complications of chronic hepatitis B have been recognized for long. There are more than 200 million HBsAg carriers in the world [1]. Although it is a global problem, the prevalence of Hepatitis B in general population is variable. In Bharat, the prevalence rate is upto 5% while it is only <0.1% in Europe and America [2]. In the Western world, HBsAg carrier state is greatest in adults and infection is usually acquired via parenteral route. In contrast, in Asia and Africa, HBV infection most often occurs in childhood via transmission from parents or siblings [1].

Renal involvement in hepatitis B is common and well recognised. Polyarteritis nodosa, membranous glomerulonephritis, type I membranoproliferative glomerulonephritis, IgA nephropathy and

cryoglobulinemia have been described [3]. We are reporting a case of an asymptomatic young female suffering from chronic hepatitis B who presented with nephrotic syndrome with minimal change glomerulonephritis as the underlying pathology.

Case History

A 32 year old house wife presented with two weeks history of progressive swelling all over the body and decreased urinary output. There was no significant past history of risk factors associated with hepatitis. On examination patient had anasarca, massive ascites with palpable spleen. Rest of the examination was unremarkable. Investigations showed Hb: 10.5 gm/dl; TLC: 2.5×10^3 /ml; DLC: P74L24E1M1; ESR: 55 mm 1st Hr; P/S: Normocytic normochromic RBC with reduced

From the Deptts. of Medicine, Lady Hardinge Medical College, New Delhi & Pathology *AIIMS & **G.B. Pant Hospital, New Delhi.
Correspondence to : Dr. A.K. Gupta, C 462, Yojana Vihar, Delhi - 110092

platelets; B. glucose (fasting): 80 mg/dl; B. urea: 40 mg/dl; S. creatinine: 1.0 mg/dl; Na⁺: 143 meq/L; K⁺: 3.1 meq/L; S. calcium: 8.1 mg/dl; S. phosphorus: 2.8 mg/dl; S. bilirubin: 0.5 mg/dl; ALT: 34 IU/L; ALP: 432 IU/L; S. Albumin: 1.3 g/dl; PT Control: 13 sec and Test: 14 sec; Urine examination: Albumin 4+, 10 WBC/ml, granular casts 1-2/HPF; 24 hr urine protein: 5.2 gm protein/day; RA factor: -ve; ANA: -ve; HBsAg: -ve; Anti-HBcAg (IgG): +ve; Anti HCV: -ve. USG abdomen reported splenomegaly with perisplenic collaterals and dilated portal vein (-18 mm). Liver and kidney's size and echotexture was normal. Upper GI endoscopy was also normal. Patient was subjected to liver and kidney biopsies. Liver histology was suggestive of chronic viral hepatitis (Fig. 1). Kidney histology was reported as normal (Fig. 2). Immunoperoxidase staining for IgA, IgG, IgM and C3 were negative. Electronmicroscopy showed denudation of epithelial foot processes (FP) in the glomeruli, absence of any electron dense deposits in glomerular basement membrane (BM) with unremarkable mesangium (Fig. 3). Thus a diagnosis of chronic hepatitis B and coexisting minimal change glomerulonephritis with nephrotic syndrome was made. Patient was managed with intravenous furosemide and salt restriction. However there was little improvement. Combination with thiazides and furosemide infusion, 10 mg/hour were tried but there was no significant diuretic response. Patient was put on prednisolone 1 mg/kg/day for 4 weeks. There was dramatic improvement in patient's condition with complete resolution of oedema and proteinuria within three weeks. S. albumin improved to 4.0 gm/dl. After 4 weeks of prednisolone, dose was changed to 1.6 mg/kg/day alternate day for 4 weeks and then gradually tapered off over next 2 months. There was a transient rise of ALT to 111 IU/L which normalized within a month. Antiviral therapy could not be started as patient was unable to afford the therapy. At 12 months of follow up patient is asymptomatic with no oedema, negative proteinuria and normal ALT levels.

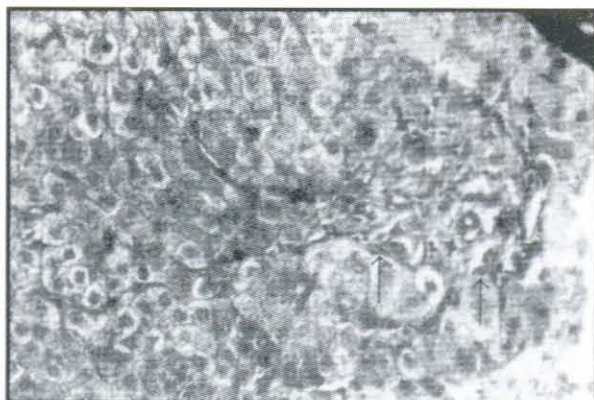


Fig. 1 : Microphotograph of liver biopsy showing mild fibrous expansion of portal tract (arrows) with minimal portal inflammatory infiltrate and ballooning degeneration of hepatocytes (H&E X 160).

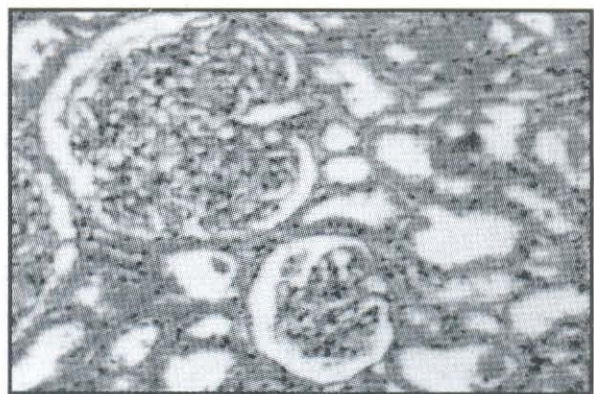


Fig. 2 : The photomicrograph showing glomeruli, tubules, interstitium and blood vessels which are histologically unremarkable.

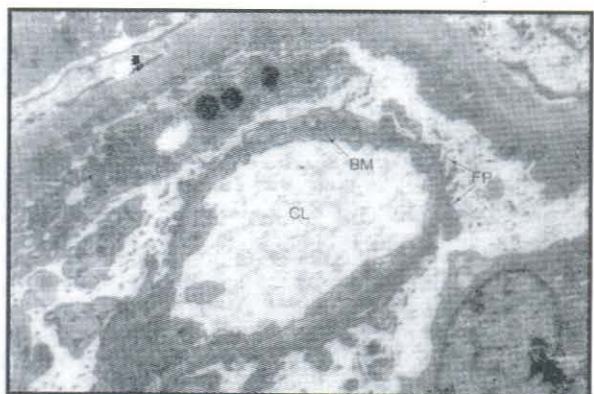


Fig. 3 : The transmission electron photomicrograph shows a capillary (CL) with marked denudation of epithelial foot processes (FP) (arrows). There is no thickening of glomerular basement membrane (BM) or any electron dense deposits (X 1200).

Discussion

A variety of glomerulonephritis have been reported in patients with chronic hepatitis B [3]. Hepatitis B associated glomerulonephritis is immune complex mediated although most patients do not have evidence of circulating immune complexes. Thus glomerular in situ immune complex formation and deposition is the probable mechanism [3].

The most common serological pattern in such patients is positivity for HBsAg and HBeAg, as well as anti-HBc antibodies, in the absence of HBs and HBe antibodies [4]. All the three hepatitis B antigens namely HBsAg, HBcAg and HBeAg have been found in glomeruli. HBsAg and HBcAg are predominantly detected in the mesangium, where as HBeAg is usually present in subepithelial deposits [3]. Though HBV related antigens are reportedly involved in the development of several types of glomerulonephritis, the most common histological types reported are membranous nephropathy in children [3,5], and membranoproliferative glomerulonephritis in adults [3,6]. The reason for a different predilection for glomerular lesion in children and adults is not clear [3]. The association of minimal change nephropathy with chronic hepatitis B is rarely reported in adults [6], though it is not uncommon in paediatric population [5]. However even in children, membranous nephropathy is the predominant type of glomerulonephritis [5].

The case reported here was completely asymptomatic with regard to chronic hepatitis B and portal hypertension. She presented in an atypical pattern with nephrotic syndrome. Minimal change glomerulonephritis as the underlying pathology is rarely seen in association with chronic hepatitis B in adults

[6]. Also, interestingly surface antigen (HBsAg) was persistently negative in this case. This may be due to the fact that sometimes HBsAg level is below the sensitivity threshold of contemporary immunoassays (low level HBsAg carrier state) [1]. There was a potential risk of activation of chronic hepatitis with the use of corticosteroids in this situation. However in view of limited treatment options available to us, we used prednisolone with patient's consent and fortunately at one year of follow up there were no signs of hepatitis activity.

We suggest that all patients presenting with nephrotic syndrome or sub-nephrotic proteinuria must be screened for hepatitis B. In case HBsAg is negative as in our case, anti HBcAg IgG and HBV DNA, if possible should be sought for.

References

1. Dienstag JL, Isselbacher KJ. Acute viral hepatitis. In: Fauci AS, Braunwald E, Isselbacher KJ, Wilson JD, Mortin JB, Kasper DL, Hauser SL, Longo DL. (eds). *Harrison's Principles of Internal Medicine*. 14th ed. New York : McGraw-Hill, 1998: 1680-88.
2. Levy M, Chen N. Worldwide perspective of hepatitis B associated glomerulonephritis in the 80s. *Kidney Int* 1991; 40 (Suppl 35), 524-33.
3. Chugh KS, Sakhuja V. Glomerular disease in the tropics. In : Davison AM, Cameron JS, Grunfeld JP, Kerr DNS, Ritz E, Winearls CG (eds). *Oxford Textbook of Clinical Nephrology*. 2nd ed. New York: Oxford University Press. 1998: 670, 712.
4. Venkateshan VS, Lieberman K, Kim DV *et al*. Hepatitis B - associated glomerulonephritis : Pathology, pathogenesis, and clinical courses. *Medicine (Baltimore)* 1990; 69: 200.
5. La Manna A, Polito C, DelGado R *et al*. Hepatitis B surface Antigenemia and Glomerulopathies in children. *Acta Paediatr Scand* 1985; 74: 122-25.
6. Akinsola A, Olusanya O, Iyuan AO *et al*. Role of Hepatitis Bs Antigen in chronic glomerulonephritides in Nigerians. *Afr J Med Sci* 1984; 13: 33-39.