Horseshoe Kidney and Membranous Glomerulonephropathy

A.	Ann	Chen ^a
W.-S.	Wang-Sheng	Ko ^b

^aDepartment of Pathology; ^bDivision of Nephrology, Department National Defense Medical Center, Taipei, Republic of China

Ann Chen, MD, Department of Pathology, Tri-Service General Hospital, 622 Ting-Chow Road, Taipei 10750 (Taiwan)

Dear Sir,

Urinary infection, hydronephrosis and calculi were common complications of horseshoe kidney [1, 2]. However, the occurrence of membranous glomerulonephropathy (MGN) in a horseshoe kidney has not been reported before. We now describe a case that has been recently seen in this hospital.

A 20-year-old man was admitted on account of sudden onset of swelling of the extremities and the penis for 1 day. His past and personal histories were nothing in particular. Physical examination showed marked swelling of the penis and severe pitting edema of the extremities. The blood routine examination showed hemoglobin 12.4 gm%; hematocrit 38.0%; white blood cell count 9,500/mm³ with a ratio of neutrophil/lymphocyte of 72/26. The urine routine examination showed protein 300 mg%; red blood cells 15–20/high-power field. The biochemical examination of serum showed creatinine 0.9 mg%; sodium 145 mEq/l; potassium 4.7 mEq/l; chloride 114 mEq/l; calcium 7.1 mg% (normal: 8.5–10.5); inorganic phosphate 3.6 mg%; blood urea nitrogen 9 mg%; cholesterol 377 mg% (normal: 140–250); total protein 4.7 gm% (normal: 6.0–8.0); albumin 2.3 gm% (normal: 3.5–5.0); aspartate aminotransferase 29 U/l; alanine aminotransferase 22 U/l. The immunoglobulin electrophoresis of serum showed IgG 806 mg% (normal: 950–2,110); IgA 194 mg%; IgM 157 mg%; C3 124 mg%; C4 38 mg%. The antinuclear antibody was negative. The ASOT was 600 hemolytic units/ml (normal: less than 200). The serum was also positive for C-reactive protein. The HBsAg was negative. Both abdominal computed tomography scan and sonogram indicated a case of horseshoe kidney (fig. 1). An open renal biopsy was performed under the impression of horseshoe kidney with glomerulonephritis. By light microscopy (fig. 2), immunofluorescent study and electron microscopy, the diagnosis of MGN was made. Then he was on prednisolone treatment (80 mg/day for 2 weeks, then tapered off to 60 mg/day for 1 week, 40 mg/day for 1 week, and 30 mg/day for 1 week in order), and got improved showing serum albumin 3.0 gm%, total protein 5.4 gm%, and daily protein loss 0.231 gm (it was 3.47 gm/day at biopsy). He was noted to have two occasions of heavy proteinuria 2 years after discharged from our hospital, and was under control by corticosteroid treatment in the local medical center. Furthermore, he showed only mild proteinuria on the 6th year of follow-up, without taking any corti-costeroids for 2 years.

Fig. 1. Computed tomography scan of abdomen showing a case of horseshoe kidney (X).

Fig. 2. Light microscopy showing diffuse thickening of the glomerular capillary walls, without hypercellularity. Hematoxylin and eosin stain. × 400.

MGN affecting a horse kidney has not been reported before. It is the underlying condition of about 25% of adults presenting with nephrotic syndrome. The disease predominantly affects men [3] and has a peak incidence between 30 and 50 years of age, with a low incidence in children [4]. About a quarter of cases pass spontaneous remission, with regression of the renal lesion [5]. The remainder usually have a gradual progression towards renal failure. It has been indicated that steroids administered on alternate days may be beneficial if started before deterioration of renal function [6]. On the contrary, Harrison et al. [7] found that treatment with steroids in their study had no important effect on outcome. This patient is, however, noted to be responsive after a 5-week course of corticosteroid treatment. Furthermore, the follow-up condition appears to support a favorable prognosis.

Ehrenreich, T.; Churg, J.: Pathology of membranous nephropathy. *Pathol. A.* 3:145–169 (1968).

Rosen, S.: Membranous glomerulonephritis: current status. *Hum. Pathol.* 2:209–231 (1971).

Laver, M.C.; Kincaid-Smith, P.: Glomerulonephritis; in Kincaid-Smith, Mathews, Lovell-Becker, *Glomerulonephritis: morphology, natural history, and treatment*, p. 46 (Wiley, New York 1973).

Coggins, C.H.: The effect of short term prednisolone treatment in adult nephrotics with minimal change (MC) and membranous (M) histology. *Kidney int.* 72:463 (1977). Harrison, D.J.;

Thomson, D.; Macdonald, M.K.: Membranous glomerulonephritis. *J. clin. Pathol.* 59:167–171 (1980).