



Figure 20-12 Membranous nephropathy. **A**, Silver methenamine stain. Note the marked diffuse thickening of the capillary walls without an increase in the number of cells. There are prominent “spikes” of silver-staining matrix (*arrow*) projecting from the basement membrane lamina densa toward the urinary space, which separate and surround deposited immune complexes that lack affinity for the silver stain. **B**, Electron micrograph showing electron-dense deposits (*arrow*) along the epithelial side of the basement membrane (B). Note the effacement of foot processes overlying deposits. CL, Capillary lumen; End, endothelium; Ep, epithelium; US, urinary space. **C**, Characteristic granular immunofluorescent deposits of IgG along glomerular basement membrane. **D**, Diagrammatic representation of membranous nephropathy. (**A**, Courtesy Dr. Charles Lassman, UCLA School of Medicine, Los Angeles, Calif.)

condition (malignant neoplasm, infection, or SLE) or discontinuance of the offending drug can reverse or ameliorate the injury.

The course of the disease is variable but generally indolent. In contrast to minimal-change disease, described later, the proteinuria is nonselective and usually does not respond well to corticosteroid therapy. Complete or partial remissions may occur in up to 40% of patients, even in some patients without therapy. Progression is associated with increasing sclerosis of glomeruli, rising serum creatinine reflecting renal insufficiency, and development of hypertension. Although proteinuria persists in more than 60% of patients, only about 10% die or progress to renal failure within 10 years, and no more than 40% eventually

develop severe chronic kidney disease or end-stage renal disease. The disease recurs in up to 40% of patients who undergo transplantation for end-stage renal disease. Spontaneous remissions and a relatively benign outcome occur more commonly in women and in those with proteinuria in the nonnephrotic range.

Because of the variable course of the disease, it has been difficult to evaluate the overall effectiveness of corticosteroids or other immunosuppressive therapy in controlling the proteinuria or progression. It is thought that circulating antibodies to PLA₂ receptor may be a useful biomarker of disease activity and thereby aid in the diagnosis and management of primary membranous nephropathy in the future.