**Chronic kidney failure**

1. A 42-year-old woman presents to the emergency department complaining of swelling of her legs, hands, and face for 4 days. On examination she is afebrile with generalized edema of her upper and lower extremities as well as her face. Her examination is otherwise notable only for scars in a linear pattern on his middle to lower arms bilaterally. Basic metabolic panel and complete blood cell count are normal, but liver function tests show a total protein level of 5.6 mg/dL and albumin of 2.6 mg/dL. Urinalysis shows 3+ protein without significant WBCs or RBCs. Which of the following is the most likely etiology of this patient’s disease?

(A) Antibody deposition

(B) Cardiomyopathy

(C) Cocaine abuse

(D) Heroin abuse

(E) Hyperglycemia

(F) Streptococcal infection

2. A 34-year-old woman presents to her primary care physician complaining of 2 weeks of cough and shortness of breath. A review of systems reveals that she has had two to three episodes of coughing up blood but no fever, chills, or weight loss. Her examination is notable for decreased breath sounds at both lung bases. Laboratory values include blood urea nitrogen and creatinine levels of 42 mg/dL and 2.3 mg/dL (previous laboratory values were within normal limits), respectively, and urinalysis shows 2+ proteinuria, microscopic hematuria, and RBC and granular casts. X-ray of the chest

shows blunting of the costodiaphragmatic angles bilaterally and a small right lower lung infiltrate. Which of the following is the most likely cause of this patient’s renal failure?

(A) Antibodies directed against the glomerular basement membrane

(B) Hepatitis C-associated cryoglobulinemia

(C) IgA deposition in the glomerular mesangium

(D) Postinfectious reaction

(E) Small vessel inflammation

3. A 50-year-old woman with a 30-year history of systemic lupus erythematosis, including lupus nephritis (currently inactive with a stable serum creatinine of 2.8-3.0 mg/dl) is seen because of a rising serum creatinine (2.9 mg/dl to 4.4 mg/dl over one month) and a serum potassium level of 6.1 mEq/L. She has been treated for nine or more months with lisinopril and losertan and, over the last month, an increased dosage of bumetraxide (while encouraged to eat additional salt). She has no uremic symptoms. Her BP is 130/80 mmHg sitting, and declines to 110/60 mmHg on standing. The most likely proximate cause of the accelerated rise in her serum creatinine concentration is:   
a) Reactivation of lupus nephritis   
b) Obstruction (bilateral) of urinary system   
c) Intravascular volume depletion from diuretics   
d) Superimposed congestive heart failure from additional salt   
e) Lisinopril and losartan

4. After appropriate treatment of the patient in question 1, serum creatinine falls to 3.4 mg/dl, but the serum potassium remains elevated in the 5.5-6.0 mEq/L range. The most appropriate next step in therapy would be   
a) Cessation of lisinopril and losartan   
b) Institution of chronic dialysis   
c) Higher doses of a loop-diuretic   
d) Substitution of eplerenone for bumetanide   
e) Rectal ion-exchange resin therapy

3. The most common systemic disease causing end-stage renal failure in the Western countries is:   
a) Amyloidosis   
b) Diabetes Mellitus   
c) Hypertensive nephrosclerosis   
d) Polycystic kidney disease   
e) All causes of renal vasculitis (eg Wegener’s)

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1. The correct answer is D. This patient presents with generalized edema, hypoalbuminemia, and marked proteinuria, fi ndings strongly suggestive of a nephrotic syndrome. The track marks on his arms are highly suggestive of drug abuse. Putting this picture together, one can deduce that the patient has focal segmental

glomerulosclerosis, a nonspecifi c nephritic syndrome that may be secondary to heroin abuse. Other causes of secondary focal segmental glomerulosclerosis include lithium and malignancy, particularly lymphoma.

Answer A is incorrect. Antibody deposition in the glomerular basement membrane is seen in

Goodpasture’s syndrome, a type of nephritic syndrome that presents with hemoptysis and respiratory symptoms in addition to renal fi ndings. Answer B is incorrect. Cocaine abusers can develop dilated cardiomyopathy, which can lead to congestive heart failure. Heart failure can cause edema, but the edema would likely

be confi ned to the lower extremities, and other fi ndings on examination would include gallops or murmurs, elevated jugular venous pressure, and signs of pulmonary vascular congestion.Answer C is incorrect. Cocaine may be injected and leave marks such as those seen on the arms of this patient. Also, cocaine may cause acute renal failure secondary to rhabdomyolysis, but red urine and myoglobulinemia would also be seen.

Answer E is incorrect. Diabetic patients with diabetic nephropathy can present with proteinuria in the nephrotic range. Diabetic nephropathy is particularly common in diabetics with poor glycemic control. However, there is no evidence that this patient has diabetes; he does not complain of polyuria or polydipsia

and he has no glucose or ketones reported in his urine. Answer F is incorrect. Streptococcal infection

can cause postinfectious glomerulonephritis, a type of nephritic syndrome that presents with hypertension, hematuria, and mild proteinuria, usually several weeks after an upper respiratory infection. The patient presented here has a nephrotic, not nephritic, picture.

2. The correct answer is C. Nephrotic syndrome with the histology pattern of membranous nephropathy is the most common cause of nephropathy among white adults and is most frequently idiopathic. Up to one-third of patients undergo spontaneous remission, one third continue to have proteinuria but maintain stable renal function, and the last third progress to end-stage renal failure at 5–10 years. Treatment is controversial, as corticosteroids alone as a primary therapy have not been proven to be effective and the risks of cytotoxic therapy do not justify their use when spontaneous partial to complete remission may occur in up to

40% of patients. Currently, cytotoxic therapy should only be offered to patients who are considered to be at high risk for progression based on clinical risk factors. Answer A is incorrect. Anti-glomerular basement

membrane antibodies are seen in Goodpasture’s syndrome, which presents with nephritic syndrome and signs of pulmonary hemorrhage such as hemoptysis. Renal biopsy in this disorder shows linear deposits of the antibody, which is different from the histologic pattern seen in membranous glomerulonephropathies.

Answer B is incorrect. The membranous nephropathy histology may also be seen in patients with hepatitis B, but this is less common than the idiopathic form. Answer D is incorrect. The membranous nephropathy histology may be seen in renal disease associated with the drugs penicillamine and gold, which may be used to treat rheumatoid arthritis. This patient, however, has no history of rheumatologic disease. Answer E is incorrect. The membranous nephropathy histology may also be seen in patients with systemic lupus erythematosus, but this is less common than the idiopathic form.