Glomerulonenhrytis

1. A 26-year-old woman is diagnosed with post-streptococcal glomerulonephritis. Which of the following is likely to be found in his urine?

A. Greater than 3 g/24-hour proteinuria without hematuria

B. Macroscopic hematuria and 24-hour urinary albumin of 227 mg

C. Microscopic hematuria with leukocytes and 24-hour urinary albumin of 227 mg

D. Positive urine culture for *Streptococcus*

E. Sterile pyuria without proteinuria

2. A 18-year-old male star gymnast presents to your office complaining of fatigue, diffuse weakness, and muscle cramps. She has no previous medical history and denies tobacco, alcohol, or illicit drug use. There is no sig­nificant family history. Examination shows a thin female with normal blood pressure. Body mass index (BMI) is 19 kg/m2. Oral examination shows poor dentition. Muscle tone is normal, and neurologic examination is normal. Laboratory studies show hematocrit of 38.5%, creatinine of 0.56 mg/dL, serum bicarbonate of 32 meq/L, and potassium of 2.8 meq/L. Further evaluation should include which of the following?

A. Urinalysis and urine culture

B. Plasma renin and aldosterone levels

C. Urine toxicology screen for opiates

D. Urine toxicology screen for diuretics

E. Serum magnesium level

3. A 54-year-old man comes to the physician complaining of morning facial puffiness and bilateral leg swelling. His other medical problems include recurrent pulmonary infections due to bronchiectasis and psoriasis. His blood pressure is 143/92 mm Hg and pulse is 92/min. His body mass index is 24 kg/m2. Examination shows a fourth heart sound. Hepatomegaly, palpable kidneys, and 2+ pitting edema of the lower extremities to the knees bilaterally are present on examination. Urinalysis shows 4+ proteinuria and normal urinary sediment. Which of the following is the most likely diagnosis in this patient?

1. Amyloidosis
2. Hepatorenal syndrome
3. Hypertensive nephrosclerosis
4. Ig A nephropathy
5. Polycystic renal disease

4. A 27-year-old woman was recently diagnosed with SLE. At the time of diagnosis, she had an elevated ESR=50mm/h and markedly elevated anti-dsDNA titers (1:320). At her rheumatologist’s office, it is discovered that she has traces of blood in her urine and proteinuria. Renal biopsy is scheduled, and she is started on a 2-month course of prednisone. Over the course of her therapy, which drug-related adverse effect is this patient most likely to experience?

(A) Hair loss

(B) Hypertension

(C) Hypoglycemia

(D) Leukopenia

(E) Weight loss

5. A 37-year-old woman presents to her primary care physician complaining of puffiness in her legs, arms, and face for 5 days. She often feels a little “bloated” during her menstrual period but is currently in the middle of her cycle, and states that she has not been drinking more than usual or eating too much salt. Examination reveals generalized edema but is otherwise unremarkable. Her physician draws blood for complete blood cell count, electrolytes, and thyroid function tests, and does a dipstick urinalysis in his office which shows 3+ proteinuria. He decides to hospitalize her and perform a renal biopsy

to determine the etiology of her nephritic syndrome. Biopsy shows a thickened basement membrane and immune-fluorescence reveals IgG and C3 deposits in a “spike and dome” pattern in the basement membrane. Which of the following is the most likely cause of this patient’s nephropathy?

(A) Anti-glomerular basement membrane antibodies

(B) Hepatitis B virus

(C) Idiopathic

(D) Penicillamine

(E) Systemic lupus erythematosus

Answer Glomerulonenhrytis

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**1. The answer is C.** *(Chap. 283)* The hallmark of glomerular renal disease is microscopic hematuria and proteinuria. IgA nephropathy and sickle cell disease are the exception to this when gross hematuria may be present. Proteinuria may be heavy (>3 g/24 hours) or lower quantity with microalbuminuria (30–300 mg/24 hours) depending on the underlying disease or site of the immune lesion. Patients with post-streptococcal glomer­ulonephritis often have pyuria, but cultures are not expected to be positive as the infection is usually skin or mucosal, and it is the immune reaction that drives the renal lesion.

**2.The answer is D.** *(Chap. 284)* In any patient with hypokalemia the use of diuretics must be excluded. This patient has multiple warning signs for the use of agents to alter her weight, including her age, gender, and participation in competitive sports. Her BMI is low, and the oral examination may suggest chronic vomiting. Chronic vomiting may be associated with a low urine chloride level. Once diuretic use and vomiting are excluded, the differ­ential diagnosis of hypokalemia and metabolic alkalosis includes magnesium deficiency, Liddle’s syndrome, Bartter’s syndrome, and Gitelman’s syndrome. Liddle’s syndrome is associated with hypertension and undetectable aldosterone and renin levels. It is a rare autosomal-dominant disorder. Classic Bartter’s syndrome has a presentation similar to that of this patient. It may also include polyuria and nocturia because of hypokalemia-induced diabetes insipidus. Gitelman’s syndrome can be distinguished from Bartter’s syndrome by hypomagnesemia and hypocalciuria.

**3.** This patient’s clinical presentation of facial swelling, bilateral lower-extremity edema, and massive proteinuria are consistent with nephrotic syndrome. The presence of nephrotic syndrome with palpable kidneys, hepatomegaly, and ventricular hypertrophy (suggested by an audible fourth heart sound) in the setting of chronic inflammatory disease (recurrent pulmonary infections, bronchiectasis) is suggestive of secondary amyloidosis (AA) as a common unifying diagnosis. Treatment is usually directed at the underlying inflammatory disease. Colchicines is approved for both the treatment and prophylaxis of AA.

**(Choice B)** Hepatorenal syndrome refers to acute renal failure in patients with acute or chronic liver disease and portal hypertension. It usually presents in patients with severe liver disease with progressively rising serum creatinine with minimal proteinuria (<500 mg/day).

**(Choice C)** Hypertensive nephrosclerosis is seen in patients with chronic hypertension and is associated with retinopathy, left ventricular hypertrophy, progressive renal failure, and mild proteinuria (generally <1 g/day). Kidneys are usually small, and hepatomegaly is not present.

**(Choice D)** Ig A nephropathy is a type of nephritis that typically presents with hematuria on urinalysis. Unlike in this patient, IgA nephropathy is usually restricted to the kidneys.

**(Choice E)** Patients with polycystic renal disease typically present with flank pain, hematuria, renal failure, hypertension, and large palpable kidneys. Hepatomegaly can also be present due to co-occurrence of hepatic cysts in some patients. However, they usually do not have the proteinuria or generalized edema seen in this patient.

**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.

**4. The correct answer is B.** Corticosteroids are a very commonly used class of medication. In this case, steroids are used to control the renal manifestations of her systemic lupus erythematosus. However, they can lead to multiple local and systemic adverse effects that a clinician must be able to recognize. Commonly, these

include acne, hirsutism, hypertrichosis, and weight gain. Corticosteroid use is less commonly associated with diabetes, hypertension, arrhythmias, and osteoporosis. Other important adverse effects include reduced defense against infection and several psychiatric disturbances, including euphoria, psychosis, and depression.

**Answer A is incorrect.** Patients taking corticosteroids are likely to experience hypertrichosis, not hair loss.

**Answer C is incorrect.** Corticosteroids typically cause hyperglycemia, not hypoglycemia, by increasing hepatic gluconeogenesis and by inhibiting peripheral utilization and glucose uptake. **Answer D is incorrect.** Corticosteroids produce a leukocytosis, not leucopenia, by causing an increase in absolute neutrophil counts,

or neutrophilia. This is caused by decreased neutrophil adhesion and increased release of stores of the bone marrow. **Answer E is incorrect.** Patients taking corticosteroids are likely to experience weight gain,

not weight loss.

**5.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.