Pericardial Disease

Uremic pericarditis is an absolute indication for the urgent initiation of dialysis or for intensification of the dialysis prescription in those already receiving dialysis. Because of the propensity to hemorrhage in pericardial fluid, hemodialysis should be performed without heparin. A pericardial drainage procedure should be considered in patients with recurrent pericardial effusion, especially with echocardiographic signs of impending tamponade. Nonuremic causes of pericarditis and effusion include viral, malignant, tuberculous, and autoimmune etiologies. It may also be seen after myocardial infarction and as a complication of treatment with the antihypertensive drug minoxidil. Consideration could be given to the use of colchicine or nonsteroidal anti-inflammatory drugs, although the latter agents could adversely affect renal function.

■ HEMATOLOGIC ABNORMALITIES

Anemia A normocytic, normochromic anemia is observed as early as stage 3 CKD and is almost universal by stage 4. The primary cause is insufficient production of erythropoietin (EPO) by the diseased kidneys. Additional factors are reviewed in **Table 311-5**.

TABLE 311-5 Causes of Anemia in Chronic Kidney Disease (CKD)

Relative deficiency of erythropoietin
Diminished red blood cell survival
Bleeding diathesis
Iron deficiency due to poor dietary absorption and gastrointestinal blood loss
Hyperparathyroidism/bone marrow fibrosis
Chronic inflammation
Folate or vitamin B_{12} deficiency
Hemoglobinopathy
Comorbid conditions: hypo-/hyperthyroidism, pregnancy, HIV-associated disease, autoimmune disease, immunosuppressive drugs