abdominal pain from bleeding into the bowel wall. This syndrome may occur after a viral prodrome and appears to be caused by an immunoglobulin A (IgA) hypersensitivity reaction, as evidenced by serum IgA immune complexes and renal histopathologic features resembling IgA nephropathy. For example, hypersensitivity to allopurinol can produce extensive cutaneous purpura.

The therapy for bleeding from vascular disorders is straightforward. Senile purpura and steroid-induced purpura do not usually require treatment. Scurvy is corrected by vitamin C supplementation. In congenital disorders, including Ehlers-Danlos syndrome, hereditary hemorrhagic telangiectasia, and pseudoxanthoma elasticum, patients should avoid medications (e.g., aspirin) that may aggravate their bleeding tendencies, and they should receive supportive therapy (e.g., iron supplementation, red blood cell transfusion). Systemic administration of estrogen to patients with hereditary hemorrhagic telangiectasia may help to decrease epistaxis by inducing squamous metaplasia of the nasal mucosa, which protects lesions from trauma.

Treatment of septic vasculitis focuses on appropriate antibiotic therapy. In the case of aseptic vasculitis, steroids and immunosuppressive agents are most effective. When vasculitis is severe enough to cause consumption of platelets and coagulation factors (see Disseminated Intravascular Coagulation), transfusions of platelets, cryoprecipitate, or fresh-frozen plasma (FFP) may be indicated.

BLEEDING CAUSED BY THROMBOCYTOPENIA

Thrombocytopenia (<150,000 platelets/μL) is one of the most common problems in hospitalized patients. The initial diagnostic approach to thrombocytopenia involves classifying whether the low platelet count is caused by decreased platelet production, increased platelet sequestration, or increased platelet destruction (Fig. 51-4).

Evaluation of the number and morphologic features of marrow megakaryocytes has been the traditional diagnostic test for differentiating decreased platelet production from peripheral sequestration (e.g., splenomegaly) or destruction (e.g., immune thrombocytopenic purpura [ITP]). The reticulated platelet count is used as a peripheral blood index of platelet kinetics in the evaluation of thrombocytopenia.

Decreased Marrow Production of Platelets

Decreased production of platelets in the bone marrow is characterized by decreased or absent megakaryocytes on the bone marrow aspirate and biopsy and a low percentage of circulating reticulated platelets. Suppression of normal megakaryocytopoiesis occurs after marrow damage and destruction of stem cells (such as occurs with cytotoxic chemotherapy); destruction of the normal marrow microenvironment and replacement of normal stem cells by invasive malignant disease, aplasia, infection (e.g., miliary tuberculosis), or myelofibrosis; specific but rare intrinsic defects of the megakaryocytic stem cells; and metabolic abnormalities affecting megakaryocyte maturation.

Drug- and Nutrition-Associated Thrombocytopenia

Thrombocytopenia may result from cytotoxic or immunosuppressive chemotherapy for malignant or autoimmune disease. The pathophysiology of decreased platelets is typically directly attributable to the toxicity of the drug or metabolite, or both. For example, myeloablative chemotherapy drugs inhibit stem cell proliferation, leading to megakaryocyte death in the bone marrow and reduced circulating mature platelets. Other commonly used drugs such as thiazide diuretics, alcohol, and estrogens may damage bone marrow megakaryocytes in a similar fashion.

Although the diagnosis of these disorders can be complex, it frequently is made by withdrawing the offending drug.

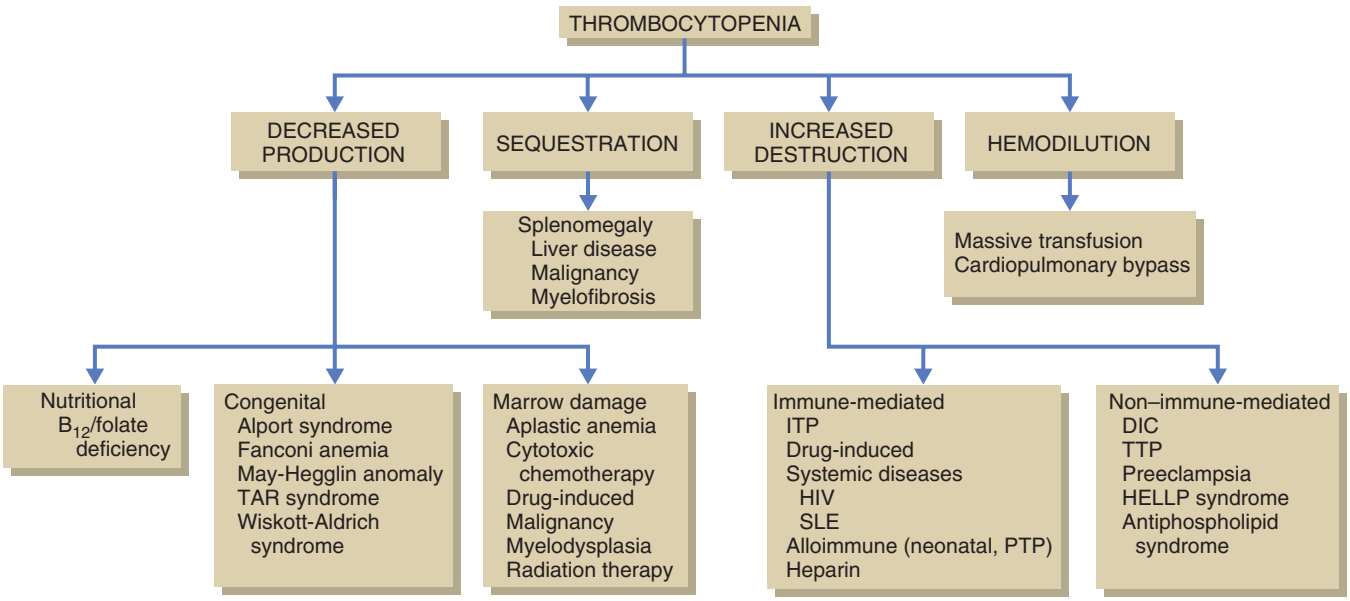

FIGURE 51-4 Differential diagnosis of thrombocytopenia. Disorders resulting in a decreased circulating platelet number can be classified by four main pathophysiologic mechanisms: hypoproduction, sequestration, peripheral destruction, and hemodilution. The history, physical examination, and bone marrow evaluation usually narrow the range of possible causes. DIC, Disseminated intravascular coagulation; HELLP, hemolysis, elevated liver enzymes, and low-platelet count in association with pregnancy; HIV, human immunodeficiency virus; ITP, immune thrombocytopenic purpura; PTP, post-transfusion purpura; SLE, systemic lupus erythematosus; TAR, thrombocytopenia-absent radius syndrome; TTP, thrombotic thrombocytopenic purpura.