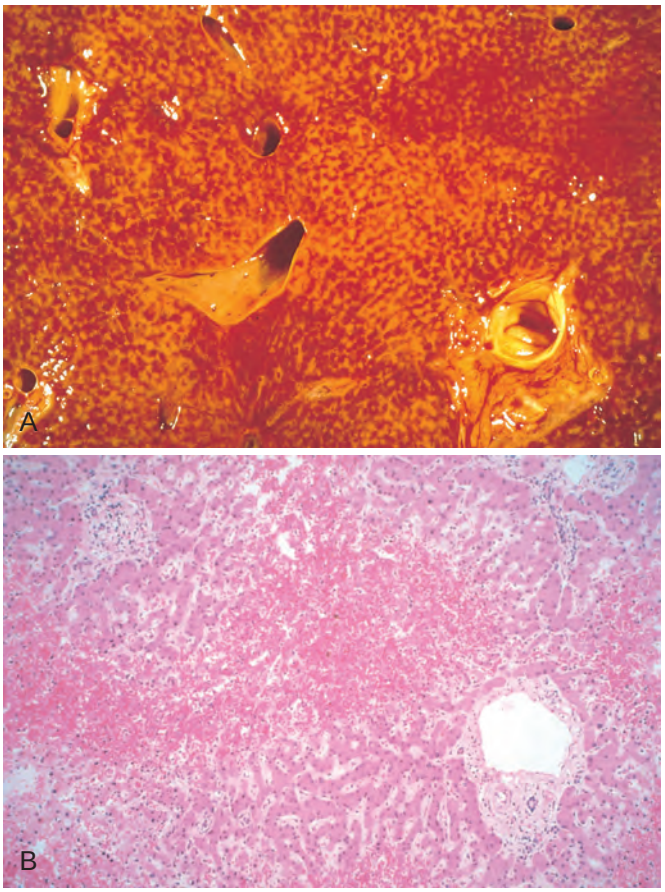

Figure 18-48 Acute passive congestion ("nutmeg liver"). **A,** The cut surface of the liver has a variegated mottled red appearance, representing congestion and hemorrhage in the centrilobular regions of the parenchyma. **B,** On microscopic examination, the centrilobular region is suffused with red blood cells and atrophied hepatocytes are not easily seen. Portal tracts and the periportal parenchyma are intact.

KEY CONCEPTS

Circulatory Disorders

- Circulatory disorders of the liver can be caused by impaired blood inflow, defects in intrahepatic blood flow, and obstruction of blood outflow.
- Portal vein obstruction by intrahepatic or extrahepatic thrombosis may cause portal hypertension, esophageal varices, and ascites.
- The most common cause of impaired intrahepatic blood flow is cirrhosis.
- Obstructions of blood outflow include hepatic vein thrombosis (Budd-Chiari syndrome) and sinusoidal obstruction syndrome, previously known as veno-occlusive disease.

Hepatic Complications of Organ or Hematopoietic Stem Cell Transplantation

The use of transplantation for bone marrow, renal, hepatic and other organ disorders has generated a challenging group of hepatic complications. Although the clinical settings are obviously different for each patient population, defined by underlying disease and the organ transplanted, the common themes of toxic or immunologically mediated liver damage, opportunistic infection of immunosuppressed hosts, recurrent disease, and posttransplant lymphoproliferative disorder are shared by all.

Graft-Versus-Host Disease and Liver Graft Rejection

The liver has the unenviable position of being attacked by graft-versus-host and host-versus-graft mechanisms, in the setting of bone marrow transplantation and liver transplantation, respectively. These processes are discussed in detail in Chapter 6. More than other solid organs, liver transplants are reasonably well tolerated by recipients. That being said, the hepatic morphologic features that are peculiar to immunological attack after transplantation deserve comment.

MORPHOLOGY

Liver damage after hematopoietic stem cell transplantation is the consequence of acute or chronic **graft-versus-host disease.** In acute graft-versus-host disease, which occurs 10 to 50 days after hematopoietic stem cell transplantation, donor lymphocytes attack the epithelial cells of the liver. This results in hepatitis with necrosis of hepatocytes and bile duct epithelial cells, and inflammation of the parenchyma and portal tracts. In chronic hepatic graft-versus-host disease (usually more than 100 days after transplantation), there is portal tract inflammation, selective bile duct destruction, and eventual fibrosis. Portal vein and hepatic vein radicles may show endothelitis with subendothelial lymphocytes lifting the endothelium from its basement membrane. Cholestasis may be observed in both acute and chronic graft-versus-host disease.

In **transplanted livers, acute (cellular) rejection** is characterized by infiltration of a mixed portal inflammatory infiltrated associated with bile duct injury and endothelitis (Fig. 18-49). With **chronic rejection** an obliterative arteriopathy of small and large arteries leads to ischemic changes in the liver parenchyma. This includes destruction of bile ducts both by immunologic attack and interruption of blood flow; the resulting **vanishing bile duct syndrome** often requires retransplantation.

Hepatic Disease Associated with Pregnancy

Hepatic diseases may occur in women with chronic liver disease who become pregnant, or develop during pregnancy in women who were not affected by liver disease. Abnormal liver tests occur in 3% to 5% of pregnancies. Viral hepatitis (HAV, HBV, HCV, or HBV + HDV) is the most common cause of jaundice in pregnancy. While these women require careful clinical management, pregnancy does not specifically alter the course of the liver disease. The one exception is HEV infection, which, for unknown reasons, runs a more severe course in pregnant patients, with fatality approaching 20%.