

■ IMAGING STUDIES

See also Chap. 423.

CT Scans CT radiographic images identify or exclude hemorrhage as the cause of stroke, and they identify extraparenchymal hemorrhages, neoplasms, abscesses, and other conditions masquerading as stroke. Brain CT scans obtained in the first several hours after an infarction generally show no abnormality, and the infarct may not be seen reliably for 24–48 h. CT may fail to show small ischemic strokes in the posterior fossa because of bone artifact; small infarcts on the cortical surface may also be missed.

Contrast-enhanced CT scans add specificity by showing contrast enhancement of subacute infarcts and allow visualization of venous structures. Coupled with multidetector scanners, CT angiography can be performed with administration of IV iodinated contrast allowing visualization of the cervical and intracranial arteries, intracranial veins, aortic arch, and even the coronary arteries in one imaging session. Carotid disease and intracranial vascular occlusions are readily identified with this method (see Fig. 427-2). After an IV bolus of contrast, deficits in brain perfusion produced by vascular occlusion can also be demonstrated (Fig. 426-12) and used to predict the region of infarcted brain and the brain at risk of further infarction (i.e., the ischemic penumbra, see “Pathophysiology of Ischemic Stroke” in Chap. 427). CT imaging is also sensitive for detecting SAH (although by itself does not rule it out), and CTA can readily identify intracranial aneurysms (Chap. 429). Because of its speed and wide availability, noncontrast head CT is the imaging modality of choice in patients with acute stroke (Fig. 426-1), and CTA and CT perfusion imaging may also be useful and convenient adjuncts.