

Emboli are responsible for approximately 20% of all ischemic strokes; they may be either cardiac or arterial in origin. Cardiac sources include atrial fibrillation, recent myocardial infarction (1–3% of all AMI), prosthetic valves, native valvular disease, endocarditis, mural thrombi, or dilated cardiomyopathy. Embolic strokes usually have a very sudden onset, and neuroimaging may demonstrate previous infarcts in several vascular territories. Thrombotic strokes represent 60% of all ischemic strokes and include both large–vessel strokes (70%) and small–vessel or lacunar strokes (30%). They occur due to in–situ occlusions, characteristically on atherosclerotic lesions in the carotid, vertebrobasilar, and cerebral arteries, typically proximal to major branches. Thrombogenic factors include injury to and loss of endothelial cells exposing the subendothelium and platelet activation by the subendothelium, activation of the clotting cascade, inhibition of fibrinolysis, and blood stasis. Thrombotic strokes are thought to originate frequently from ruptured atherosclerotic plaques. Intracranial atherosclerosis may be the cause in patients with widespread atherosclerosis. In other patients, especially at younger ages, other causes should be considered, including coagulation disorders, sickle cell disease, fibromuscular dysplasia, arterial dissections, and vasoconstriction associated with substance abuse. Lacunar strokes represent 20% of all ischemic strokes. They occur when the penetrating branches of the middle cerebral artery, the lenticulostriate arteries, or the penetrating branches of the circle of Willis, vertebral artery, or basilar artery become occluded. Causes of lacunar infarcts include microatheroma, lipohyalinosis, fibrinoid necrosis secondary to hypertension or vasculitis, hyaline arteriosclerosis, and amyloid angiopathy. The great majority is related to hypertension. Of all stroke types, lacunar strokes have the best prognosis. The Watershed infarcts, also known as border zone infarcts, are due to relative hypoperfusion in the most distal arterial territories and can produce bilateral symptoms. Frequently, these are associated with surgical procedures.

The focal brain lesions encountered in patients with stroke produce a wide variety of neurological deficits such as hemiplegia, hemisensory loss, aphasia, hemianopsia, etc...

Arm dysfunction after stroke is extremely common and usually associated with similar dysfunction in the leg arising on the same side of the body. As many as 88% of patients with an acute stroke have hemiparesis (Foulkes, Wolf et al. 1988). Stroke can also be associated with a wide range of other physical and cognitive disabilities.