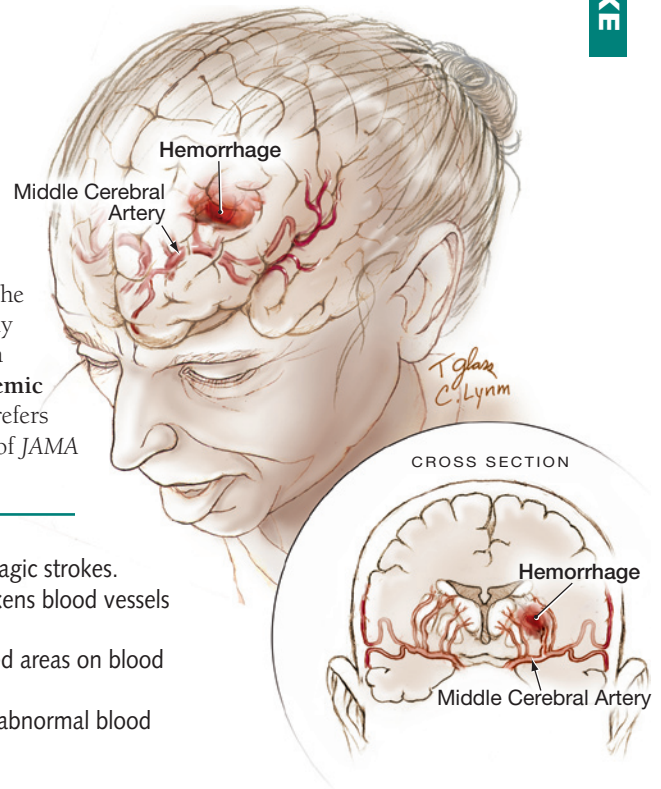


# Hemorrhagic Stroke

**A** hemorrhagic stroke occurs when a blood vessel in the brain leaks or ruptures, resulting in bleeding into the brain. Parts of the brain affected by the bleeding can become damaged, and if enough blood accumulates, it can put pressure on the brain. The amount of **hemorrhage** (bleeding) determines the severity of the stroke. The other main type of stroke is caused by blockage in the blood vessels supplying blood to the brain and is called an **ischemic stroke**. The term *ischemia* means inadequate blood flow, and *stroke* refers to the sudden onset of the symptoms. The October 20, 2004, issue of *JAMA* includes an article about detecting hemorrhagic strokes.



## CAUSES OF HEMORRHAGIC STROKES

- **Hypertension** (high blood pressure) is a major risk factor for hemorrhagic strokes.
- In older persons, **cerebral amyloid angiopathy** (a condition that weakens blood vessels in the brain) can lead to hemorrhagic strokes.
- **Aneurysms** (tiny blood-filled pouches that balloon out from weakened areas on blood vessel walls) are prone to leaking or bursting.
- **Cerebral arteriovenous malformations** are clumps of interconnected abnormal blood vessels that are present from birth and can bleed later in life.
- Blood vessels in brain tumors may be prone to bleeding.

## STROKE SYMPTOMS

- Sudden numbness, weakness, or paralysis of an arm, leg, or entire side of the body
- Sudden trouble seeing in one or both eyes
- Sudden difficulty speaking
- Sudden confusion, dizziness, or loss of consciousness
- Sudden severe headache

If you or anyone you know experiences any of these symptoms, call for immediate emergency medical attention.

## DIAGNOSIS

A careful medical history and physical examination of the patient are essential. Imaging of the brain using magnetic resonance imaging or computed tomography may be helpful to determine the type and severity of stroke. **Angiography** (imaging performed with contrast dye injected into blood vessels) may be done to visualize abnormal blood vessels in the brain.

## TREATMENT OF HEMORRHAGIC STROKE

- Blood-thinning drugs used to treat ischemic stroke should not be used in patients with hemorrhagic stroke because they can increase the bleeding.
- If blood pressure is too high, it can be treated with medications.
- Brain aneurysms may be treated with surgery.

Sources: American Heart Association; National Institute of Neurological Disorders and Stroke; National Stroke Association

Sharon Parmet, MS, Writer

Tiffany J. Glass, MA, Illustrator

Richard M. Glass, MD, Editor

The JAMA Patient Page is a public service of *JAMA*. The information and recommendations appearing on this page are appropriate in most instances, but they are not a substitute for medical diagnosis. For specific information concerning your personal medical condition, *JAMA* suggests that you consult your physician. This page may be photocopied noncommercially by physicians and other health care professionals to share with patients. Any other print or online reproduction is subject to AMA approval. To purchase bulk reprints, call 718/946-7424.

## FOR MORE INFORMATION

- American Heart Association  
800/242-8721  
[www.americanheart.org](http://www.americanheart.org)
- National Institute of Neurological Disorders and Stroke  
800/352-9424  
[www.ninds.nih.gov](http://www.ninds.nih.gov)

## INFORM YOURSELF

To find this and previous JAMA Patient Pages, go to the Patient Page link on *JAMA*'s Web site at [www.jama.com](http://www.jama.com). A Patient Page on the warning signs of stroke was published in the April 22/29, 1998, issue; one on guarding against stroke was published in the September 23/30, 1998, issue; and one on preventing a first stroke was published in the March 24/31, 1999, issue.

