Cerebral Aneurysm

What is a cerebral aneurysm?
A cerebral aneurysm is a bulge in the wall of an artery in the brain. It occurs when there is a weakness in the artery's wall. The bulge may slowly enlarge over time. It can rupture or burst and bleed.

What causes an aneurysm?
It is not really clear why some people get aneurysms. Some ideas are:

- A person can be born with a defect or weak area in one of the artery layers.
- As a person ages, bulging occurs from the constant blood flow through the artery. High blood pressure may also cause growth.
- Trauma can weaken or damage the artery wall.
- Infection can weaken the artery wall.

What does it look like?
Aneurysms come in a variety of shapes and sizes. The most common type is a berry aneurysm. It is round like a berry and connected to the artery by a stem or neck.

Learn more about your health care.
A fusiform aneurysm is spindle-shaped without a neck.

A giant aneurysm is like a berry aneurysm, but it is large, 1¼ inches or 3 centimeters or more in diameter.

What are the symptoms of a cerebral aneurysm?
Symptoms can occur:

- Before rupture or bleeding
- After rupture or bleeding

**Before rupture:** Most patients do not have any symptoms. Some may have some warning signs. That can happen if the aneurysm is getting bigger or if a small leak occurs. Symptoms can include eye pain, blurred or double vision, or a droopy eyelid.

**After rupture:** When blood escapes around the brain sudden severe symptoms result. Patients have a severe violent headache, changes in level of wakefulness, vomiting or seizures. Some symptoms can resemble a stroke such as problems speaking, moving an arm or leg, or face weakness. It is not unusual for the patient to have high blood pressure.

Aneurysm rupture is further defined by the location of the bleed called a hemorrhage. Bleeding can occur in one or more places:

- **Subarachnoid hemorrhage:** Bleeding into the subarachnoid space that surrounds the surface of the brain.

- **Intraventricular hemorrhage:** Bleeding into the fluid-filled spaces called ventricles of the brain.
• **Intracerebral hemorrhage:** Bleeding into the brain tissue.

**How is an aneurysm diagnosed?**

- A history and physical are done.
- A CT scan is used to find the location and amount of the bleeding. It also shows if there is swelling around the bleed or even a stroke.
- A lumbar puncture is used to look for red blood cells (blood) in the cerebral spinal fluid (CSF).
- A CT scan angiography is used to evaluate the blood vessels. This is a CT scan with dye.
- Cerebral angiogram is used to study the blood vessels of the brain. It helps to find the location of the aneurysm.
- Brain magnetic resonance imaging (MRI) or magnetic resonance angiography (MRA) is used to show the aneurysm location if it is large enough.

**How are cerebral aneurysms treated?**

One of the first goals will be to fix the cerebral aneurysm to prevent it from bleeding. Either surgery or endovascular treatment may be offered to repair the aneurysm. The timing and type of treatment will depend on the location and size of the aneurysm and the patient’s medical condition.

- **Surgery**
  
  To get to the aneurysm, the surgeon removes a section of the skull bone in a surgery called a craniotomy. The surgeon then separates the brain tissue to reach the aneurysm. During the surgery, the aneurysm may be fixed by:
  
  - Placing a clip on the neck of the aneurysm to cut off blood flow into the aneurysm.
  - Wrapping the aneurysm wall with muscle or muslin to prevent bleeding.
  - Coating the aneurysm wall with a self-hardening plastic or glue to prevent bleeding.
Endovascular Treatment

Endovascular treatment is a minimally invasive procedure that treats the aneurysm from inside the cerebral artery. A small plastic tube called a catheter is placed into the artery in the groin of the patient’s leg. The catheter is moved through the artery into the head and into the aneurysm. From the catheter, one of these treatments may be done:

> Coiling is the placement of tiny platinum coils inside the aneurysm. These coils block blood flow into the aneurysm.

> A stent or a wire cage that is placed over the aneurysm. This redirects blood flow over the aneurysm. A stent may also be used to keep coils inside the aneurysm. If a stent is used, the patient must be on a mild blood thinner called Plavix for at least 6 weeks. Plavix helps prevent clots from forming on the stent until the stent is healed. The patient will also need to take a baby aspirin each day for at least 6 months.

Medical Treatment

Along with surgery or endovascular treatment, your treatment may also include:

> Blood pressure control
> Intravenous (IV) fluids to prevent dehydration
> Pain medicine

How long will it take to recover?

Recovery depends on whether or not the aneurysm has bled or ruptured. If the aneurysm has ruptured, recovery will depend on how severe the bleeding is and whether there are any problems. Many patients require long hospital stays and rehabilitation after the rupture of a cerebral aneurysm.

Problems from Ruptured Cerebral Aneurysm

Rebleeding:

Rebleeding may occur at any time before the aneurysm is repaired. The highest risk is in the first 24 hours. However, there is a very high chance the aneurysm will bleed again within 6 months if no treatment is given. Patients often have worse symptoms if the aneurysm rebleeds.
• **Cerebral Vasospasm:**
Vasospasm is a narrowing of the cerebral arteries near the ruptured aneurysm. When the arteries are narrowed, there is less blood flow to the brain tissue. This can result in temporary or permanent loss of brain functions based on the area of brain that is affected.

• **Hydrocephalus:**
Blood in the fluid-filled spaces of the brain, called intraventricular or subarachnoid spaces, can block the normal flow of cerebral spinal fluid (CSF). The spaces swell with CSF and put pressure on brain tissue. Patients may become sleepier or complain of more headaches. A CT scan will be done to find hydrocephalus. An external shunt tube may be placed to reduce the pressure. When the blood reabsorbs, normal CSF flow resumes. A shunt may be needed permanently if the CSF does not begin to circulate normally.

• **Seizures:**
Blood that spills over the brain can cause the tissue to become irritable. The irritability can cause sudden uncontrollable electrical changes in normal brain function. Patients may have twitching of their face, uncontrollable movements of the body, arms or legs, or blackouts. After a seizure, patients are often less awake and may be confused. Seizures can be controlled with medicine.

• **Cognitive Decline:**
Patients may have changes in their mental status and behavioral changes. These may be temporary, but in some cases they remain permanent.

If you have questions, call: _________________________________.

- Talk to your doctor or others on your health care team if you have questions. You may request more written information from the Library for Health Information at (614) 293-3707 or email: health-info@osu.edu.