Subarachnoid Hemorrhage (SAH)

Overview

Subarachnoid hemorrhage (SAH) means there is bleeding into the fluid space that surrounds the brain. This space is filled with cerebrospinal fluid (CSF), which cushions the brain and spinal cord like a shock absorber. Subarachnoid hemorrhage is a type of hemorrhagic stroke. In hemorrhagic strokes, there is bleeding into the brain. About 5-7% of all strokes are due to subarachnoid hemorrhage.

Causes

An aneurysm, a weak spot on a blood vessel, is the cause of a subarachnoid hemorrhage (SAH) about 85% of the time.

This is an extremely serious problem.

• 10-15% of people are unable to get to the hospital in time after an aneurysm bleeds.
• Only about 20% of people make a perfect recovery back to their prior level of function.

In the other 15% of cases, the bleeding is caused by head trauma, a blood vessel malformation or just a small leak of blood from a tiny blood vessel.

Symptoms

SAH causes a severe headache. An SAH headache:

• Typically comes on very suddenly, like a thunderclap or a hit to the back of the head.
• May be associated with nausea, vomiting and a very stiff neck. Some people feel or hear a popping sound.
• Is typically the worst headache of one’s life.
• Is sometimes associated with a seizure.
• May cause problems such as weakness, vision change, confusion or coma.
• May last about 2 weeks in patients who do not go to the doctor or emergency room.
Risk factors

Some of the factors that can contribute to aneurysm formation and rupture are:

- hypertension (high blood pressure)
- smoking
- excessive alcohol intake
- family history of aneurysms
- polycystic kidney disease

The risk factors you can control are high blood pressure, smoking and alcohol intake.

Treatment of subarachnoid hemorrhage

Caused by an aneurysm - It is important to treat the aneurysm in order to prevent re-bleeding.

- Aneurysms can be treated either by closing off the aneurysm from the inside with coils or from the outside using small metal clips.
- You will receive additional specific information if you had one of these treatments during your hospitalization.

Not caused by an aneurysm - You may be discharged from the hospital in just a day or two.

- The amount of headache and your recovery time depend on the amount of blood that leaked out at the time of your hemorrhage.
  - Some people have very little blood leakage and are back to work in a couple of weeks.
- People who have a large hemorrhage may be out of work for 3 or more months.
  - You may be hospitalized for a longer period of time if you have a lot of subarachnoid blood or severe symptoms from the bleeding.

Side Effects of Subarachnoid Hemorrhage

Vasospasm is blood vessel narrowing caused by breakdown of the blood in the subarachnoid space. Anytime there is bleeding within the body, the body clears out the blood by breaking it down and absorbing it, in the same way that it clears out a bruise on your arm or leg. As the blood is broken down, chemicals are released that irritate the blood vessels and brain.

- This irritation causes the blood vessels in the brain to react by constricting or narrowing.
- This can cause a problem if the vessels constrict so much that blood flow to the brain tissue is reduced.
- If this constriction is severe, it can cause strokes.
- Patients are kept in the hospital for 10 days or more after an aneurysmal subarachnoid hemorrhage in order to help prevent and treat this vasospasm.
Another side effect of the bleeding into the subarachnoid space can be a low level of sodium in the blood. Sometimes the brain reacts to the hemorrhage by sending a signal to your kidneys to excrete or get rid of sodium. In the hospital, you may have been on high doses of salt pills and salt fluids through your intravenous (IV) line. Gradually your body normalizes and your salt level returns to normal. You may, however, be sent home with instructions about tapering off of medications that were used to treat your low sodium level.

Bleeding into the brain and the subarachnoid space may cause fluid to build up in the head. We all make about 2 cups of clear, watery cerebrospinal fluid (CSF) each day. It is produced in the fluid spaces inside the brain called the ventricles. The spinal fluid then leaves the brain and surrounds the entire brain and spinal cord before it is absorbed again into the large veins at the top of the brain.

If blood gets into the spinal fluid, it can interfere with the normal flow of the CSF. If you had a buildup of spinal fluid after your hemorrhage, you probably had a tube placed in your head called an external ventricular drain (EVD). About 30% of the people who have this problem with spinal fluid buildup require surgery for placement of a permanent drain under the skin called a shunt. If you had this procedure, you will receive other instructions related to your shunt. It is important to know whether this is a shunt that is safe for any brain scans you have in the future.

Back pain is quite common after subarachnoid hemorrhage. The blood that leaked out of the aneurysm or blood vessel into the subarachnoid space can flow down into the spinal fluid that surrounds your spinal cord and your lower back. Just as the blood is very irritating to your brain and causes a severe headache, the blood can irritate the nerves in your back and cause back pain. This will gradually resolve over 2-4 weeks. Medications like ibuprofen (Advil or Motrin) seem to help this pain more than any other medication. Check with your nurse or doctor to make sure that it is safe for you to take these medications.

**Recovery**

Your recovery after leaving the hospital will depend on:

- How ill you were at the time you first had the hemorrhage.
- The amount of bleeding you had.
- Whether you developed vasospasm or not.
- Whether you had any complications related to your time treatment or time in the hospital.

Even people who have minimal neurological problems from the hemorrhage and no significant vasospasm will need 3-4 months to recover from an aneurysm bleed. In the initial time after hemorrhage, people notice headache, fatigue, difficulty concentrating, short-term memory loss and decreased ability to multitask.

The people who have had a severe hemorrhage or a complicated course may require 6-18 months for recovery. Some will have permanent neurological problems. Overall, though, there is steady improvement week by week after a subarachnoid hemorrhage. You will find that your headaches, fatigue, memory and concentration problems will all clear or improve.

Some people suffer from anxiety or depression after this serious illness. Please talk with your doctor or nurse if you have these problems. Sometimes just talking with a therapist about your fears and anxiety will help tremendously. Sometimes medication will be helpful.
Each patient and each recovery is different. We encourage you to join a support group if there is one in your area. There are also online resources available. Some are:

The Aneurysm and AVM Foundation:  www.TAAFonline.org
The American Stroke Association:  www.strokeassociation.org
The Brain Aneurysm Foundation:  www.bafound.org
National Stroke Association:  www.stroke.org

Unless an appointment has already been made, contact your Primary Care Physician's office to schedule a follow-up appointment within one week.

**Prevention of Subarachnoid Hemorrhage**

Most people will never have this problem again. If you had only one aneurysm and no family history of aneurysm, you are very unlikely to have another subarachnoid hemorrhage. Some doctors will have you get a follow-up test every few years to check for any new aneurysms. If you have a family history of brain aneurysms, you should be very strict about getting the follow-up studies so that any new aneurysms can be treated before a hemorrhage.

You should pay close attention to the risk factors you can control in order to prevent another aneurysm from occurring. These recommendations are part of a prevention program for all strokes and promote lifelong health.

- If you smoke, STOP NOW. Take advantage of your time in the hospital to stick with quitting. For assistance, you can call 1-800 NO BUTTS.
- If you have high blood pressure, monitor it regularly and make sure you obtain a primary care doctor to follow your blood pressure and your health in general. Do not stop your blood pressure medications unless instructed to by your doctor.
- Adopt a healthy lifestyle by eating right and exercising regularly. Avoid extra salt in the diet and eat plenty of fruit, whole grains and vegetables. Use non-fat or low-fat dairy items.
- Care for your mental and emotional health. Seek counseling or treatment for depression. Exercise will help your mood and emotions as well as your physical recovery. Seek out a local support group if there are any in your community.

Image Credit: The Aneurysm and AVM Foundation