

Subarachnoid hemorrhage : Information for patients and families

Vancouver General Hospital Intensive Care Unit

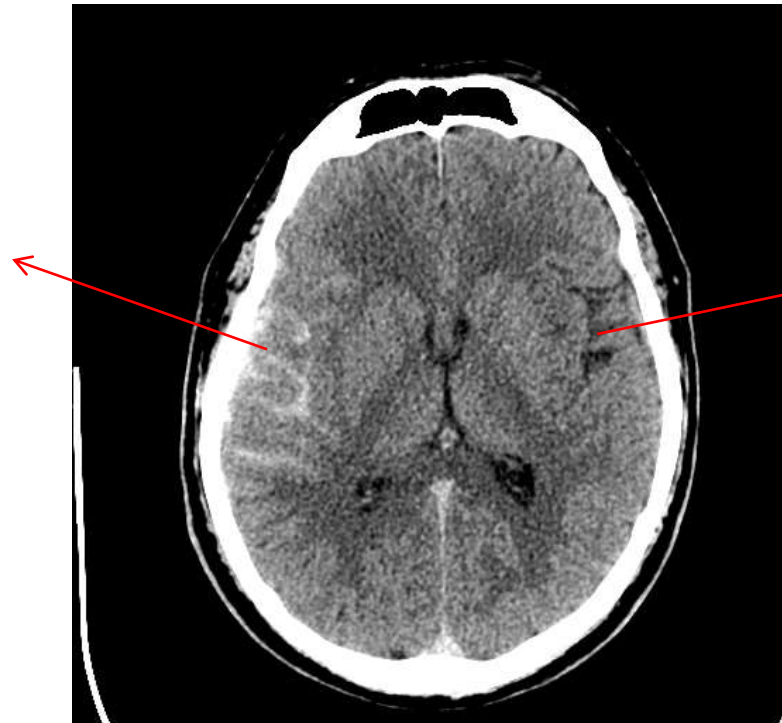
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Definition

A “subarachnoid hemorrhage” is a term used to describe a bleed which surrounds the lining of the brain

Blood
(white)
which is
lining the
crevice of
the brain



A normal
crevice of
the brain
without
blood

What's caused this?

An aneurysm is the most common cause

An aneurysm is a weakening in a blood vessel in the brain which develops into an out-pouching

Eventually, this out-pouching bursts and causes blood to surround the lining of the brain

Other less common causes include:

- Infection
- Trauma
- Other blood vessel diseases
- Drugs



Outline
Definition
Classification
Diagnosis
Management

What's caused this?

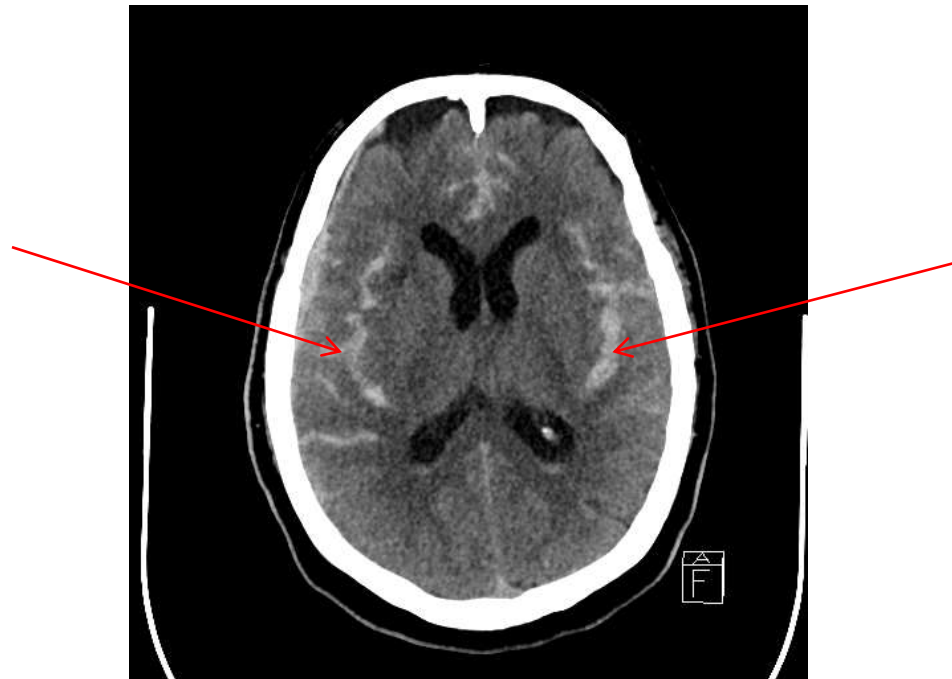
Cerebrovascular aneurysm



Diagnosis?

A CT scan of the head is required to confirm the presence of a SAH

Rarely, a lumbar puncture (a needle is used to take a sample of the fluid which surrounds the brain and spinal cord from the lower back) is required



How do we treat a SAH?

If a SAH is found then we need to look for an aneurysm with a detailed examination of the brain's blood vessels

We do this with an “angiogram”

Cerebrovascular aneurysm

The white spot is an aneurysm



How do we treat a SAH?

If an aneurysm is found, we must prevent another recurrent bleed

We do this with a combination of medical treatment and surgery

Surgical treatment

- The aneurysm is filled with metal coils or the neck of the aneurysm is “clipped” to prevent further bleeding
- This is usually done within the first 48-72h

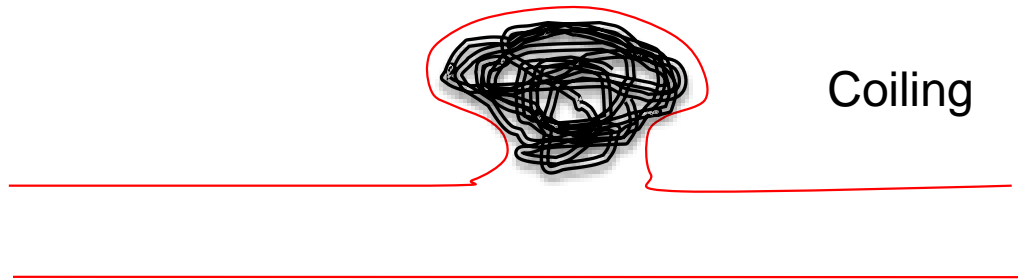
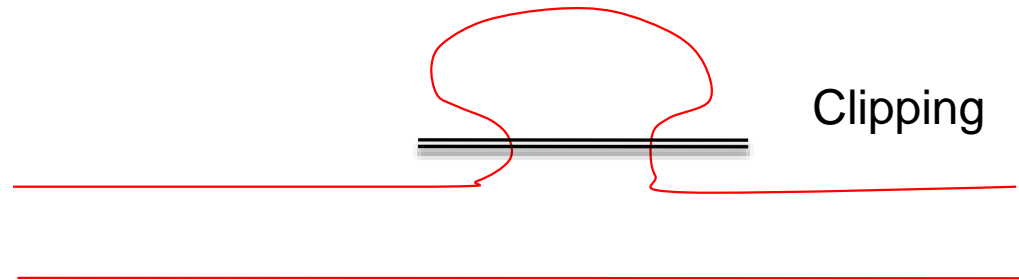
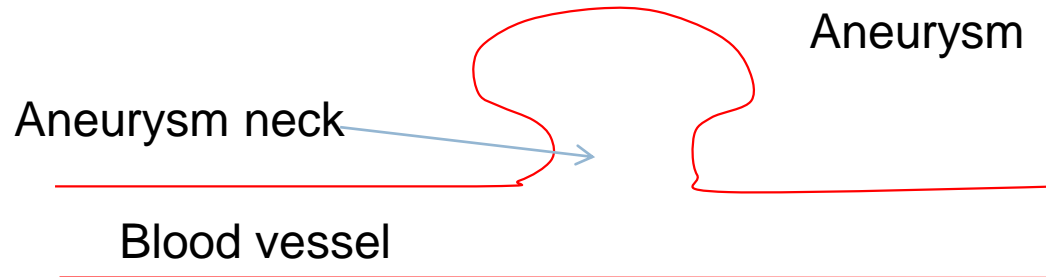
Medical Treatment

- We control the blood pressure to avoid dangerous elevations which may cause a re-bleed



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How do we treat a SAH?



How do we treat a SAH?

Clipping is done in the operating room

Coiling is done in the radiology department with the use of wires which are inserted into the blood vessels in the groin and place the coils in the aneurysm. It is done under x-ray guidance

The decision to proceed to with clipping or coiling depends on the location, size, accessibility, type of aneurysm etc.



How do we treat a SAH?

Many (known and anticipated) complications can occur after a SAH

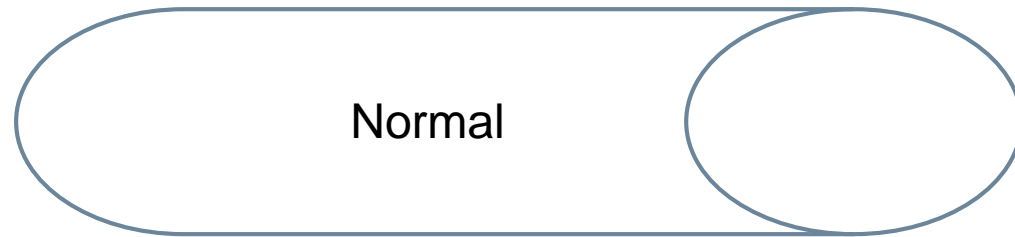
- Vasospasm (narrowing of surrounding blood vessels)
- Hydrocephalus (enlargement of the fluid filled spaces in the brain)
- Sodium disorders (changes in the salts in the blood)
- Seizures



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How do we treat a SAH?

Vasospasm



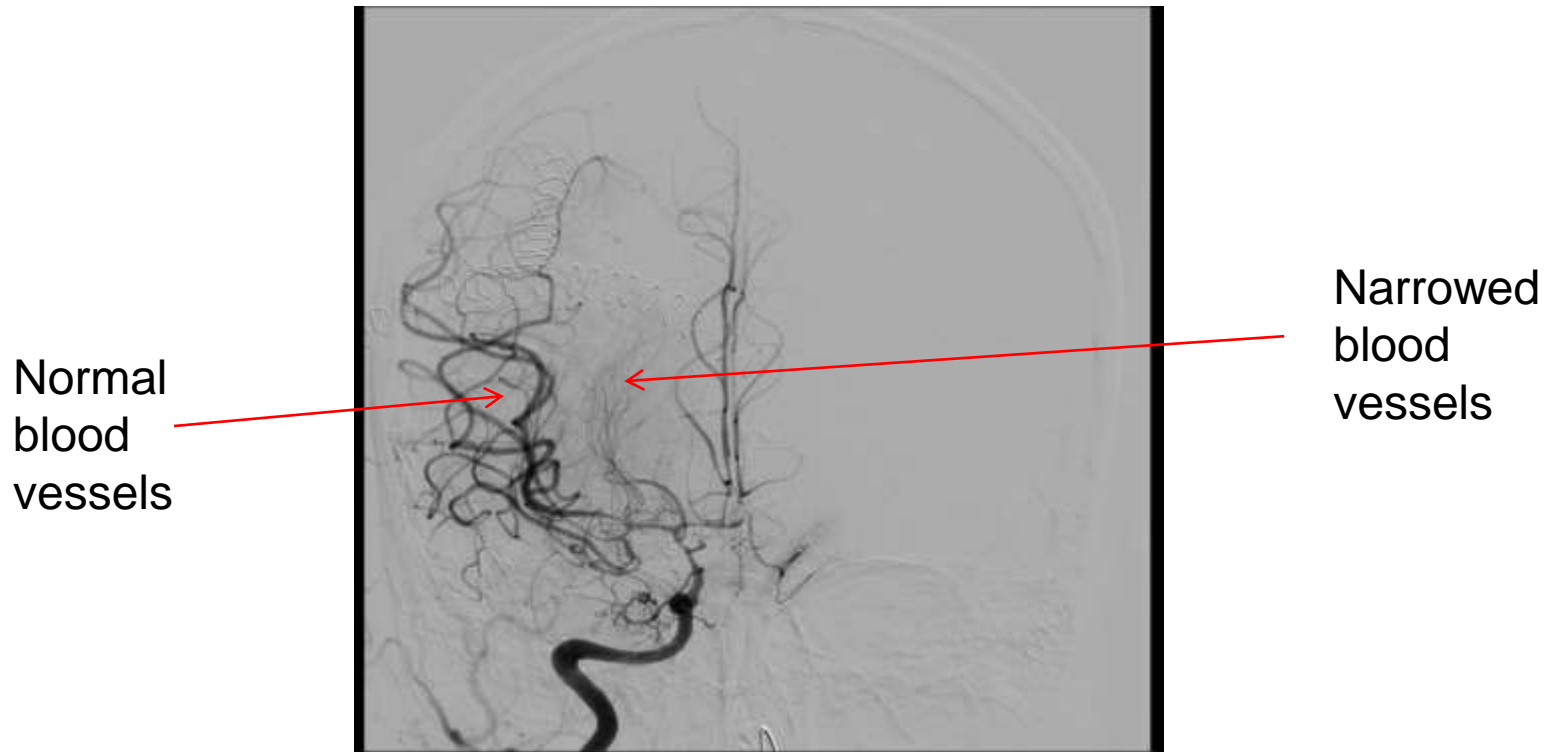
Blood surrounding the lining of the brain in a SAH is extremely irritating to the blood vessels. Some blood vessels shrink in size (vasospasm) as a result of this. Blood flow can be limited with a narrowing of the size of these blood vessels and strokes can occur from not enough oxygen supply



How do we treat a SAH? Vasospasm

We must confirm the presence of “vasospasm” with an angiogram or CT “perfusion”

Angiogram



How do we treat a SAH?



We use powerful medications to increase the blood pressure by forcing the heart to pump harder. By increasing the blood pressure, we force blood through the narrowed blood vessels and increase blood flow. This gives the brain enough oxygen to stay alive.

Analogous to opening the tap in a hose while watering your garden

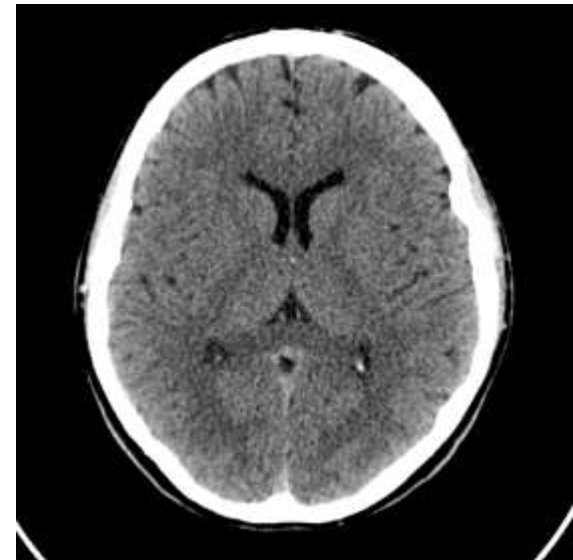
How do we treat a SAH? Hydrocephalus

We confirm the presence of hydrocephalus with a CT scan

Hydrocephalus

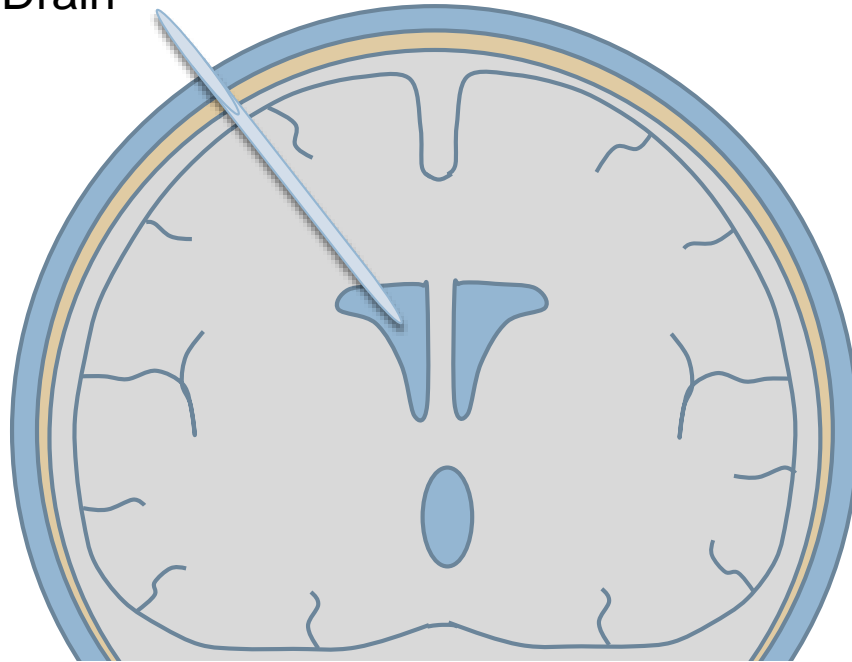


Normal



How do we treat a SAH? Hydrocephalus

Drain



We place a tube (drain) into the ventricles (fluid filled sacs) of the brain to prevent further expansion and compression of the adjacent brain

How do we treat a SAH? Sodium disorders

After a SAH, the centres in the brain which control the concentrations of the salts in the body can become dysfunctional.

Therefore, we need to monitor the salts (sodium) in the blood closely and normalize their levels with medications and intravenous solutions



How do we treat a SAH? Seizures

Seizures can occur after a SAH because the blood surrounding the brain is very irritating to them brain

We investigate if patients are having seizures with a test called an EEG (electroencephalogram) which records the electrical activity in the brain

If patients are having seizures then we treat them with anti-seizure medications and monitor for improvement with EEG and clinical examination



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Questions?

Feel free to ask us!!

VGH Intensive Care Unit

