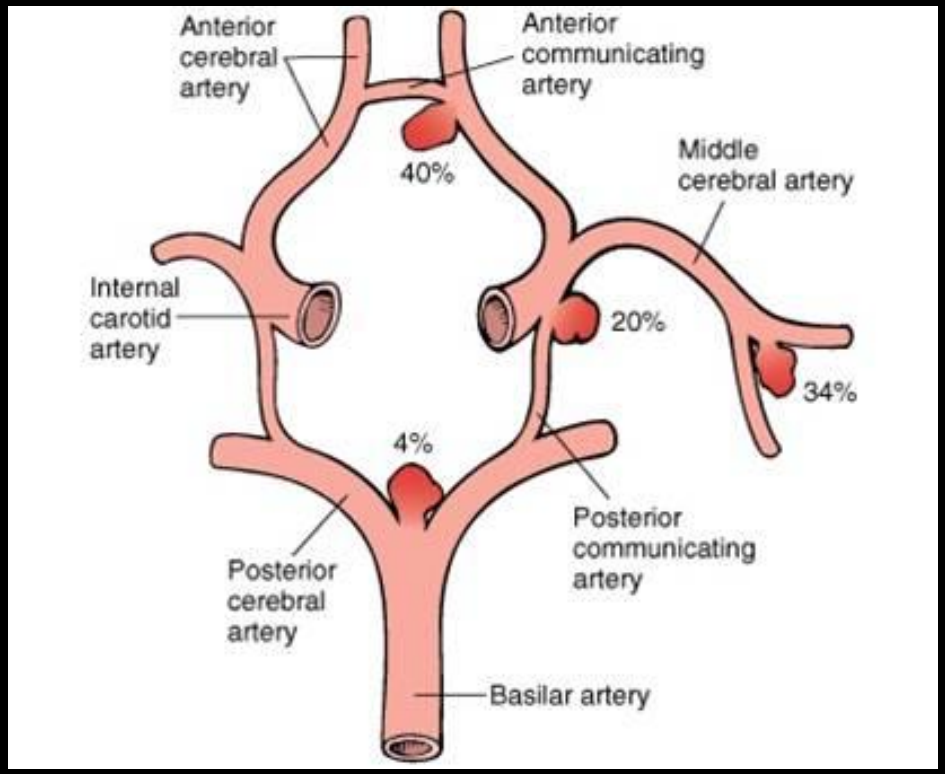
Aneurysm

- Fusiform – usually atherosclerotic, can cause emboli
- Women > men
- SAH 15 % no cause.
- For Coils, 3D MRA is good for follow up, can see filling of coils.
- Vasospasm - 4- 11 days.

Aneurysms

- Saccular “berry” (80%)
- Fusiform
- Dissecting



Saccular Aneurysms

- Most are true aneurysms
- Deficient tunica muscularis protruding through defect in internal elastic lamina and tunica media
- 1% autopsies
- 7% of patients undergoing DSA for indication other than SAH

Saccular Aneurysms

- Degenerative vascular injury #1 etiology
- Trauma, mycotic, oncotic, flow-related, vasculopathy
- Increased incidence with ADPCKD, aortic coarctation, FMD, CTD, spontaneous dissections

Fusiform Aneurysms

- Caused by atherosclerotic disease
- Most often in vertebrobasilar system
- Associated with dolichoectasia
- Complications are often due to mass effect and thrombosis

Dissecting Aneurysm

- Following a dissection an intramural hematoma may organize and result in a saclike out-pouching
- Extracranial ICA > vertebral artery
- Elongated collection extending beyond vessel lumen

Dissecting Aneurysm

- Etiology- trauma>vasculopathy (SLE, FMD)>spontaneous dissection

Multiple Aneurysms

- Multiple aneurysms in 15-20%
- 75% with multiple have 2, 15% have 3, 10% more than 3
- Strong female predominance
- Increased with FMD, collagen vascular disease

Location

- 90% anterior circulation, 10% vertebrobasilar
- Approximately 35% ACOM, 35% PCOM, 20% MCA bifurcation, 5% Basilar, 2% distal to COW
- Giant- greater than 2.5 cm

Hunt and Hess Grading System

- Grade 1 - Asymptomatic or mild headache
- Grade 2 - Moderate-to-severe headache, nuchal rigidity, and no neurological deficit other than possible cranial nerve palsy
- Grade 3 - Mild alteration in mental status (confusion, lethargy), mild focal neurological deficit
- Grade 4 - Stupor and/or hemiparesis
- Grade 5 - Comatose and/or decerebrate rigidity

Fischer Scale (CT)

- Group 1 - No blood detected
- Group 2 - Diffuse deposition of subarachnoid blood, no clots, and no layers of blood greater than 1 mm
- Group 3 - Localized clots and/or vertical layers of blood 1 mm or greater in thickness
- Group 4 - Diffuse or no subarachnoid blood, but intracerebral or intraventricular clots are present

SAH

- Fischer scale used to predict likelihood of symptomatic cerebral vasospasm
- Hunt and Hess is correlated with patient outcome
- H and H score 1-3, surgery recommended
- H and H score 4-5, institution dependent and outcome poor with or without surgery

Endovascular Aneurysm Treatment

- Poor clinical grade
- Medically unstable
- Location imparts an increased surgical risk, such as cavernous sinus and many basilar tip aneurysms
- Small-neck aneurysms in the posterior fossa
- Patients with early vasospasm
- Cases where the aneurysm lacks a defined surgical neck (although these are also difficult to "coil")
- Patients with multiple aneurysms in different arterial territories if surgical risk is high

Surgical Aneurysm Treatment

- Large and giant aneurysm
- Wide-necked aneurysms
- Vessels emanating from the aneurysm dome
- Mass effect or hematoma associated with the aneurysm
- Recurrent aneurysm after coil embolization