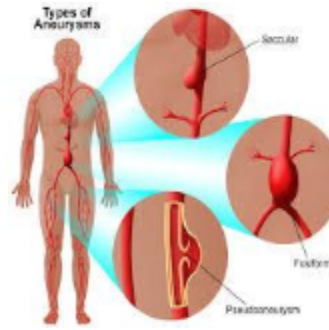


Aneurysm Fact Sheet

Introduction:

- An aneurysm: a focal dilation of an artery to > 1.5 its normal diameter
- Classified as:
 - Either true or false
 - True aneurysms: associated with involves all three layers of the arterial wall
 - False aneurysms (pseudoaneurysms): trauma/infection; covered only by a fibrous capsule and involves only a portion of the wall or surrounding tissue
 - Based on shape: fusiform vs. saccular
 - fusiform: diffusely dilated
 - saccular: an outpouching of an otherwise normal-appearing artery
- May occur in any location of the arterial tree, but most common in the infra-renal aorta, iliac arteries, popliteal arteries



diameter

atherosclerosis;
wall
occur secondary to
fibrous capsule and
surrounding tissue

Epidemiology:

- 2% to 3% of men older than 70 yrs. of age have an aortic aneurysm
- Patients with high risk factors (cigarette smoking, HTN, DM, obesity, etc.), have an incidence of up to 10%
- Aneurysmal formation is a systemic and familial disease
 - a patient with a popliteal aneurysm has a 60% chance of having an aneurysm in the contralateral popliteal artery and a 50% chance of harboring an abdominal aortic aneurysm (AAA)

Pathophysiology:

- 90% of all aneurysms are associated with atherosclerosis
 - atherosclerosis impairs the diffusion of nutrients and allows for metalloproteinase-mediated arterial wall degeneration
- Less common causes: connective tissue disease (Marfan's syndrome, Ehler's-Danlos syndrome), infection (mycotic aneurysms), disruption of anastomotic connections (anastomotic pseudoaneurysm) and trauma (traumatic pseudoaneurysm)
- Natural course of an aneurysm: enlarge and rupture
 - 0.3cm/yr is the average rate of enlargement, but some aneurysms double in size over a few months; so the majority of growth rates are unpredictable

Clinical Presentation:

- Usually discovered as an asymptomatic pulsatile mass on routine PE or during diagnostic tests for other conditions
- ~20% have symptoms; clinical presentation reflects the location of the aneurysm
 - Abdominal and thoracoabdominal aortic aneurysms: pulsatile mass or if ruptured, acute back pain, hypotension and hemodynamic collapse
 - Popliteal and femoral aneurysms: rarely rupture; but thrombus can dislodge and embolize into the arteries of the calf and foot-> acute arterial ischemia
 - Carotid artery aneurysm: either asymptomatic pulsatile neck mass or cerebrovascular ischemia (TIA, stroke, etc.)

Diagnosis:

- Careful PE; if suspected, patient should undergo diagnostic evaluations

Aneurysm Fact Sheet

- best screening tool for aortic and peripheral aneurysms: ULTRASONOGRAPHY
 - assesses the size and location with more than 95% accuracy
 - if diagnosis of AAA is established, undergo CT scan to gather information about the character, wall thickness and location with respect to the renal arteries, presence of leak or rupture; better assess the need for intervention
 - MRI: provides more details than CT or US about the lumen, surface anatomy, neck and relationship to renal arteries
 - routine angiography is still advised for peripheral artery aneurysms to plan the arterial reconstruction

Management:

- Aneurysm rupture is expected to cause as many as 60% of deaths
- Size of aneurysm is critically important: risk of rupture is diameter dependent
 - Studies show that a 4 cm AAA has an annual risk of rupture < 5%, but the annual rate increases to 15% when the AAA reaches 6 cm
- Guidelines:
 - Patients may be followed by surveillance with asymptomatic AAAs < 5.5 cm
 - Most clinicians recommend repair whenever the anticipated risk of rupture exceeds the risk of mortality from the surgery (generally about 2-5%)
 - occurs in patients with an AAA > 5.5 cm or one that is tender on exam
 - conventional elective open surgical repair technique: abdominal incision -> dissection and isolation of the normal proximal aorta and distal arteries -> heparinization -> aorta is clamped and aneurysm is incised -> prosthetic graft is sewn in place and covered with the residual aneurysm sac
 - aneurysms that involve the iliac arteries are more challenging -> aortoiliac bypass graft, but they do not afford long term success mainly due to leaks at the distal aortic attachment site
 - led to creation of endovascular grafts and stents that bridge the infrarenal aorta to both iliac arteries; associated with decreased blood loss, a shortened hospital stay and a more rapid return to normal activity
- Patients who present with a pulsatile abdominal mass, hypotension and back pain must be taken directly to the OR for repair
 - Careful resuscitation with fluid and blood products should be provided while being prep
- Popliteal aneurysms are repaired if they are > 2 cm in diameter, if there is evidence of thrombus formation in the aneurysmal wall or following distal embolization
 - preoperative angio is essential for planning reconstruction and delivering thrombolytic therapy to thrombosed distal vessels
 - repair is best accomplished with open surgery w/ a saphenous vein graft over a prosthetic graft due to its superior patency for below the knee revascularization

Complications:

- Immediate complications: MI (3%-16%), renal failure (3%-12%), colonic ischemia (2%), distal emboli and hemorrhage
- Long-term complications: aortic graft infection with or without fistula formation, graft thrombosis and pseudoaneurysm formation