PERIPHERAL VASCULAR DISEASE
PVD

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PERIPHERAL VASCULAR DISEASE (PVD)

Overview

Peripheral : Refer to any arteries that not supply Heart or Brain.
Include:1-Arms
2-Legs
3-Other organ

Vascular : Refer to Blood Vessels

Also known, Peripheral arterial disease (PAD)

Objectives:

1-Definition of peripheral vascular disease(PVD).
2-Etiology and causes of PVD.
3-Types of PVD.
4-Epidemiology of PVD.
5-Pathogensis of PVD.
6-Risk factor of PVD.
7-Site of occlusion.
8-Differntial diagnosis.
9-*Clinical features of PVD.*
10-Diagnosis of PVD.
11-Treatment of PVD .

Introduction:

-**PVD** :refers to any disease or disorder of the circulatory system outside of the brain and heart, and is defined as a clinical disorder in which there is a stenosis or occlusion in the aorta or the arteries of the limbs.

Etiology:

-Atherosclerosis is the leading cause of PAD in patients >40 years old.

-Other causes : Thrombosis, Embolism, Vasculitis , Fibro muscular dysplasia, and Trauma.

-Types:1-Organic PVD 2-Functional PVD.

-Peripheral arterial disease (PAD) has been estimated to affect about 20% of individuals aged 55–75 years.

-Only 25% of patients present with symptoms.

-The most common symptoms is intermittent claudication(IC).

-It's more common in middle aged men than in women.

-the annual mortality rate of people with IC is about 5%.

-The cause of death is typically an MI or stroke.

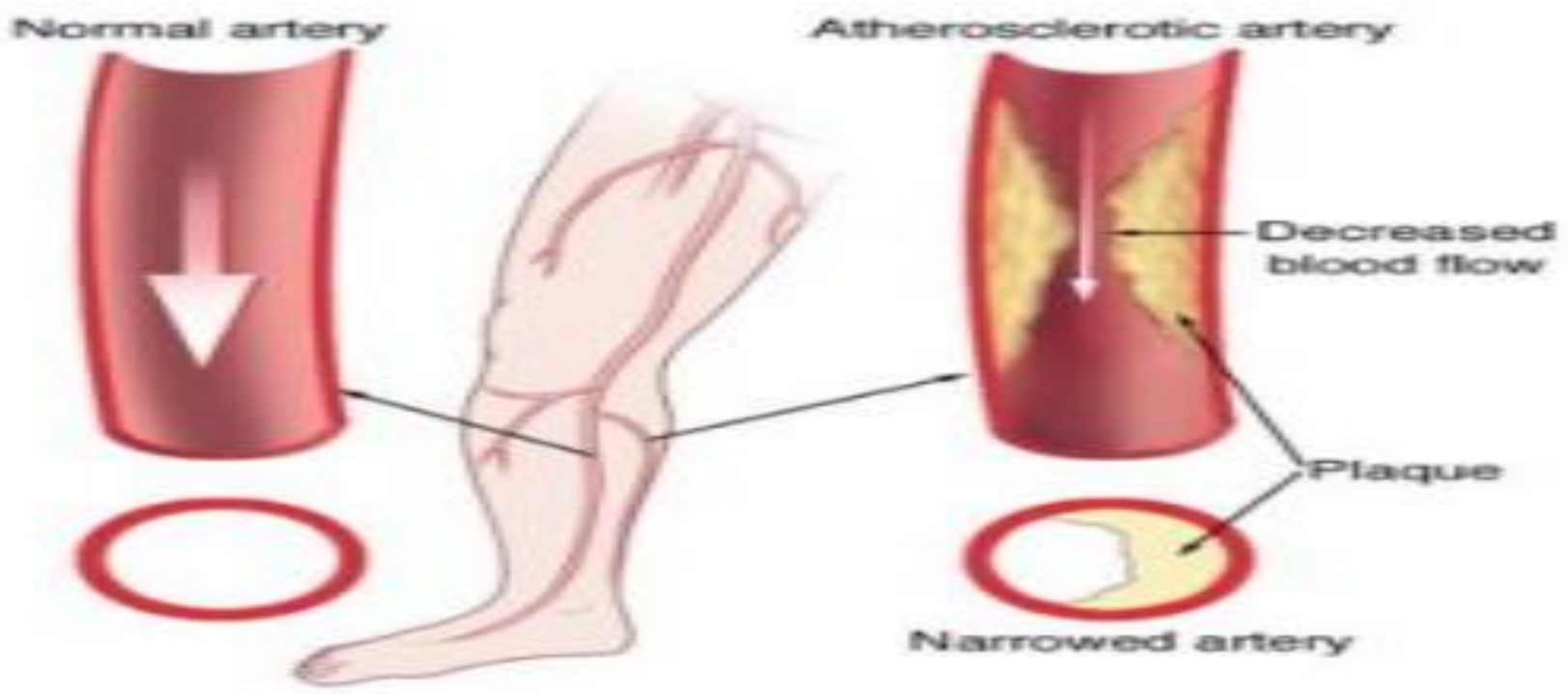
-It usually coexist with CHF, MI, and other chronic medical conditions as DM, lung diseases.

Pathogensis:

↓ blood flow → arterial insufficiency → tissue ischemia.
↓ gas and nutrient exchange → tissue loss, ulcer formation → poor healing.
Embolus formation → acute limb ischemia → tissue loss.
Ischemic cells release adenosine → adenosine signals nerves → sensation of pain
***Claudication:* pain caused by poor circulation; occurs when oxygen demand is greater than oxygen supply**

Risk factor:

1-Smoking is by far the most important risk factor.
2-CAD,hyperlipidemia,HTN.
3-Diabetes.
4-Aging.
5-Operating machinery tools.



Prognosis

a. If the patient has intermittent claudication, the prognosis is good.

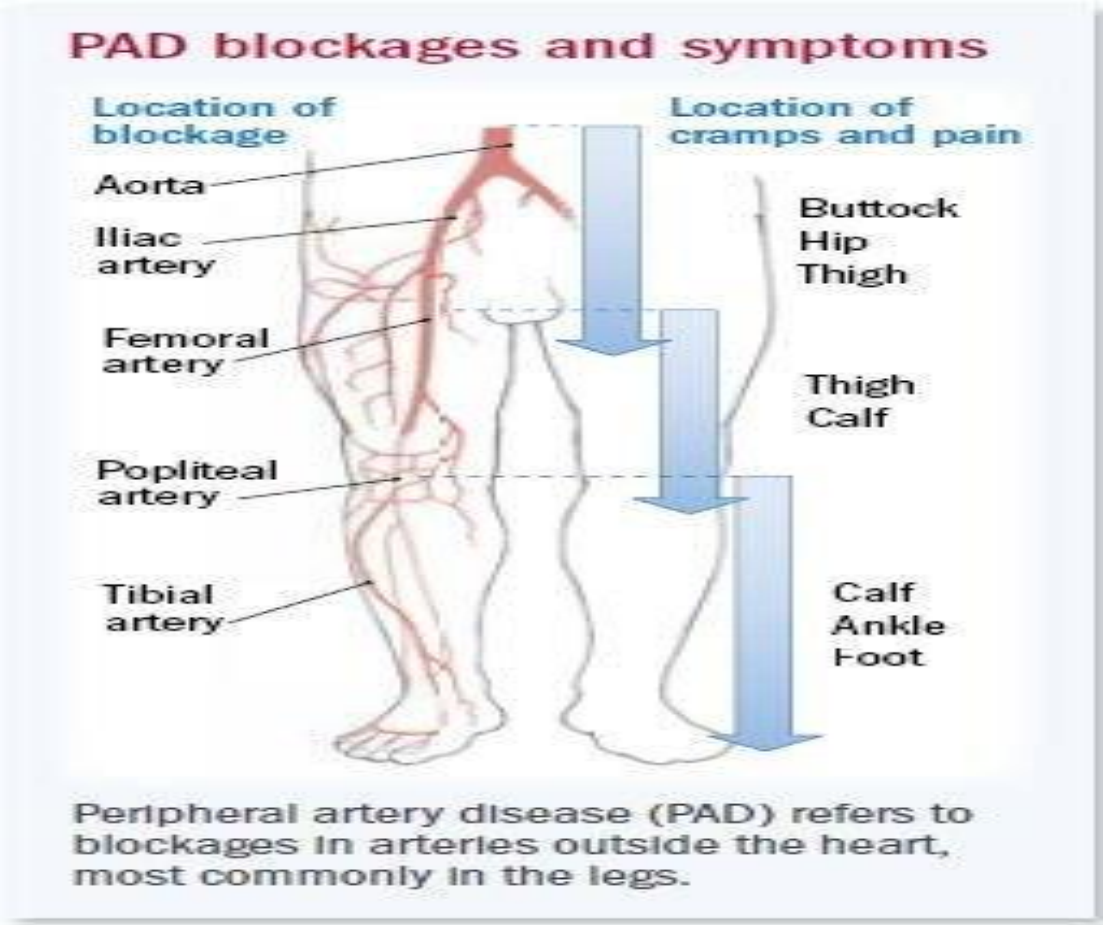
b. Patients with rest pain or ischemic ulcers have the worst prognosis.

Sites of occlusion

a. Superficial femoral artery is the most common sit.

b. Popliteal artery.

c. Aorta-iliac occlusive disease.



Location of pain is dependent upon artery implicated:

1-Lower aorta or iliac artery = pain in hips and buttocks
2-Iliac or common femoral artery = pain in thigh
3-Superficial femoral artery = pain in upper ⅔ of calf
4-Popliteal artery = pain in lower ⅓ of calf
5-Tibial or peroneal artery = pain in foot

Differential diagnosis

It is important to differentiate vascular claudication from lumbar spinal stenosis, and know that the latter causes a pseudoclaudication. Lumbar spinal stenosis is relieved only by sitting down (flexing the spine), but not by standing still. It is exacerbated by anything that extends the spine, such as standing or walking (especially down hill). Vascular claudication is relieved by sitting down or standing still.

Signs and symptoms:

Peripheral arterial disease can be described using the Fontaine classification:

a. Stage I – asymptomatic.
b. Stage II – intermittent claudication.
c. Stage III – rest pain/nocturnal pain.
d. Stage IV – necrosis/gangrene.

Fontaine stage		Description
I	Asymptomatic	PAD present but no symptoms
II	Intermittent claudication	Cramping pain in leg muscles precipitated by walking and rapidly relieved by rest
III	Rest pain	Constant pain in feet (often worse at night)
IV	Tissue loss	Ischaemic ulceration or gangrene

Clinical features

Symptoms

Features of the disease depend on the anatomical site, the presence of collaterals, the onset and the mechanism of injury.

1-intermittent claudication : pain affecting the calf, and less commonly the thigh and buttock, that is induced by exercise and relieved by rest.
2-Rest pain : severe continuous burning or pain felt over the distal metatarsals, wakes the patient up at night, relieved by hanging the foot over side of the bed or standing.

Signs

1-Diminished or absent pulses.

2-Muscular atrophy.

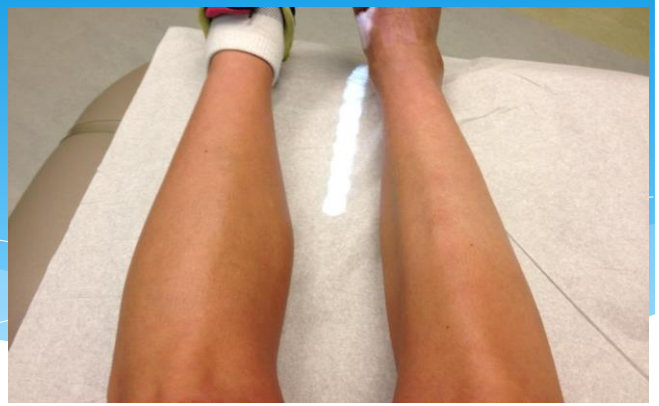
3-Decreased hair growth.

4-Decreased temperature.

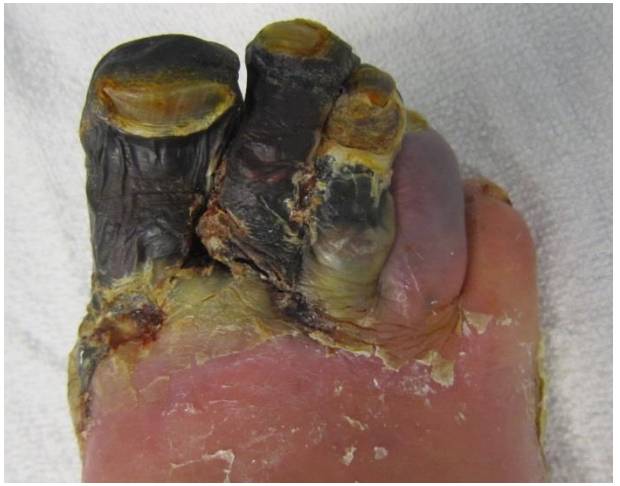
5-Thickening of toenails.

6-Tissue infection or gangrene.

7-pallor of elevation and rubor of dependency.



Muscle atrophy



Gangrene

Diagnosis

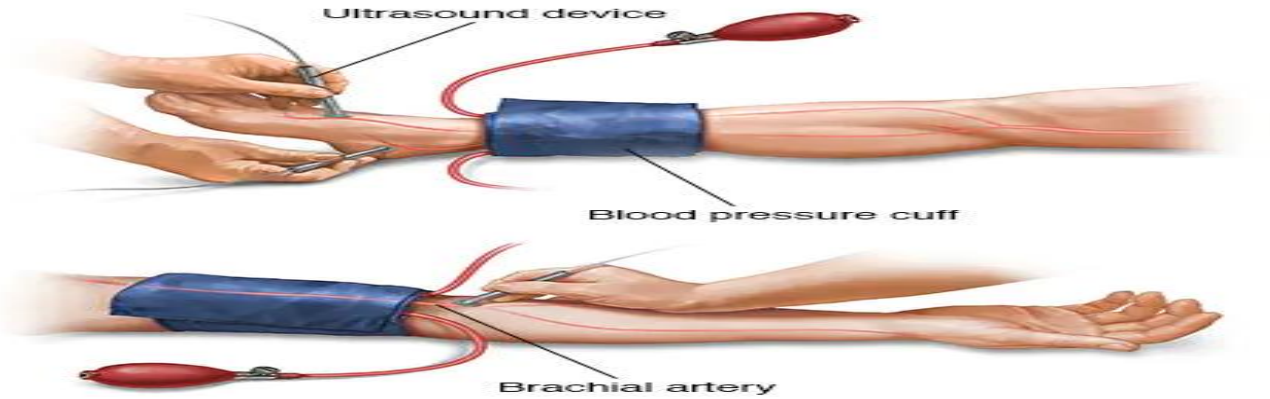
1-Arteriography: Gold standard.

2-Ankle-to-brachial index(ABI):Ratio of the systolic BP at the ankle to the systolic BP at the arm.

a. Normal ABI is between 0.9 and 1.3

b. Claudication usually when ABI < 0.7

c. Rest pain usually when ABI < 0.4



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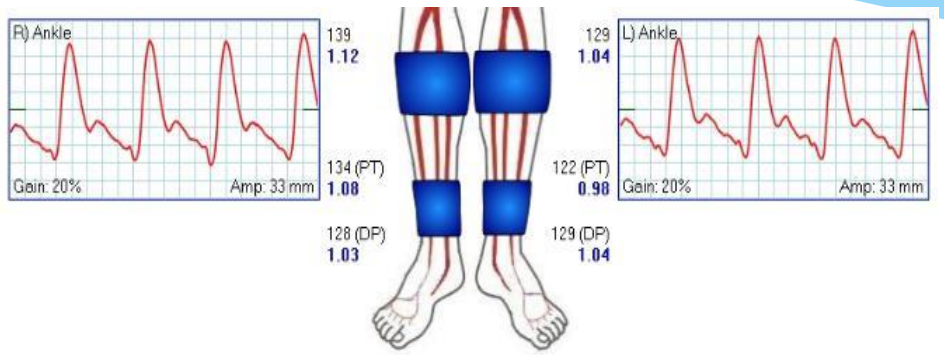
3-Pulse volume recordings: represents the volume of blood per beat in the leg.



4- Doopler and duplux imaging :Ultrasound

Treatment

A-Conservative management:

1-avoid risk factors and life style modification: quit smoking, exercise.

2-Avoid extreme temperature.

3-foot care.

B- medications:

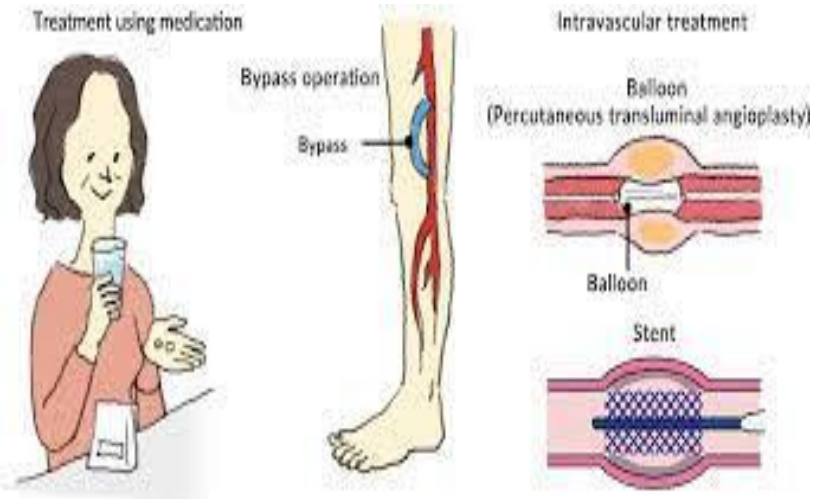
1-Use aspirin with other anti-platelets drugs in cardiac patients to relieve symptoms.

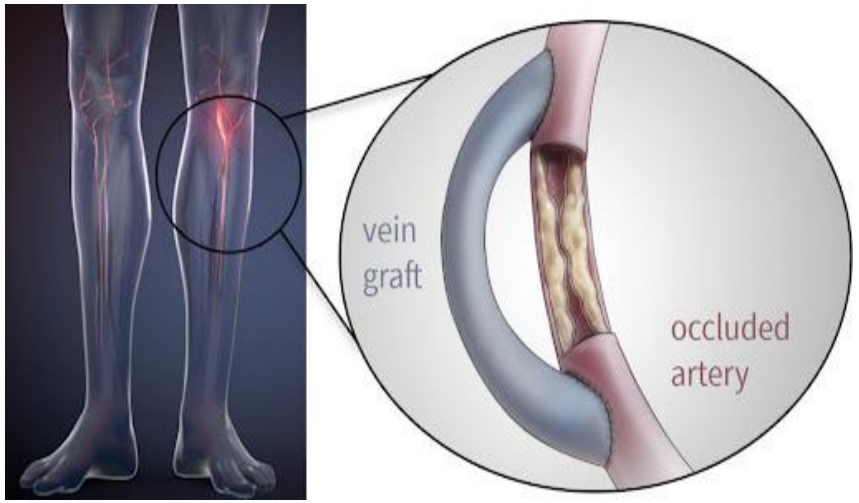
2- Cilostazol, Naftidrofuryl.

Cont…

C- surgical treatment : in case of rest pain, ulcers, severe symptoms affecting the quality of life.

1-Angioplasty.
2-Bypass procedures.
3-Amputation.





Atherosclerosis VS PVD

Atherosclerosis is the deposition of lipid plaques within the walls of arteries which results in narrowing of the lumen of the artery, and hardening of the wall, which firstly can cause no symptoms but with age advancing and progression of the deposition it leads to ischemia (diminished blood and O2 supply) which consequently results in:

1-Angina and heart attacks "within the coronary arteries".
2-Stroke and TIA "cerebral and carotid arteries"
3-If this deposition occurs in the peripheral circulation, it results in PVD, that manifests as pain, ulcers, and diminished wound healing.

conclusion : Atherosclerosis in the periphery= PVD

Acute limb ischaemia

Ahmad Almefleh

General characteristics

- **(1) Acute limb ischaemia** (**ALI**) occurs when there is a sudden lack of blood flow to a limb , the **common femoral artery** is the most common site of occlusion .
- It is caused by **embolism** or **thrombosis in situ**, or rarely by **dissection or trauma**

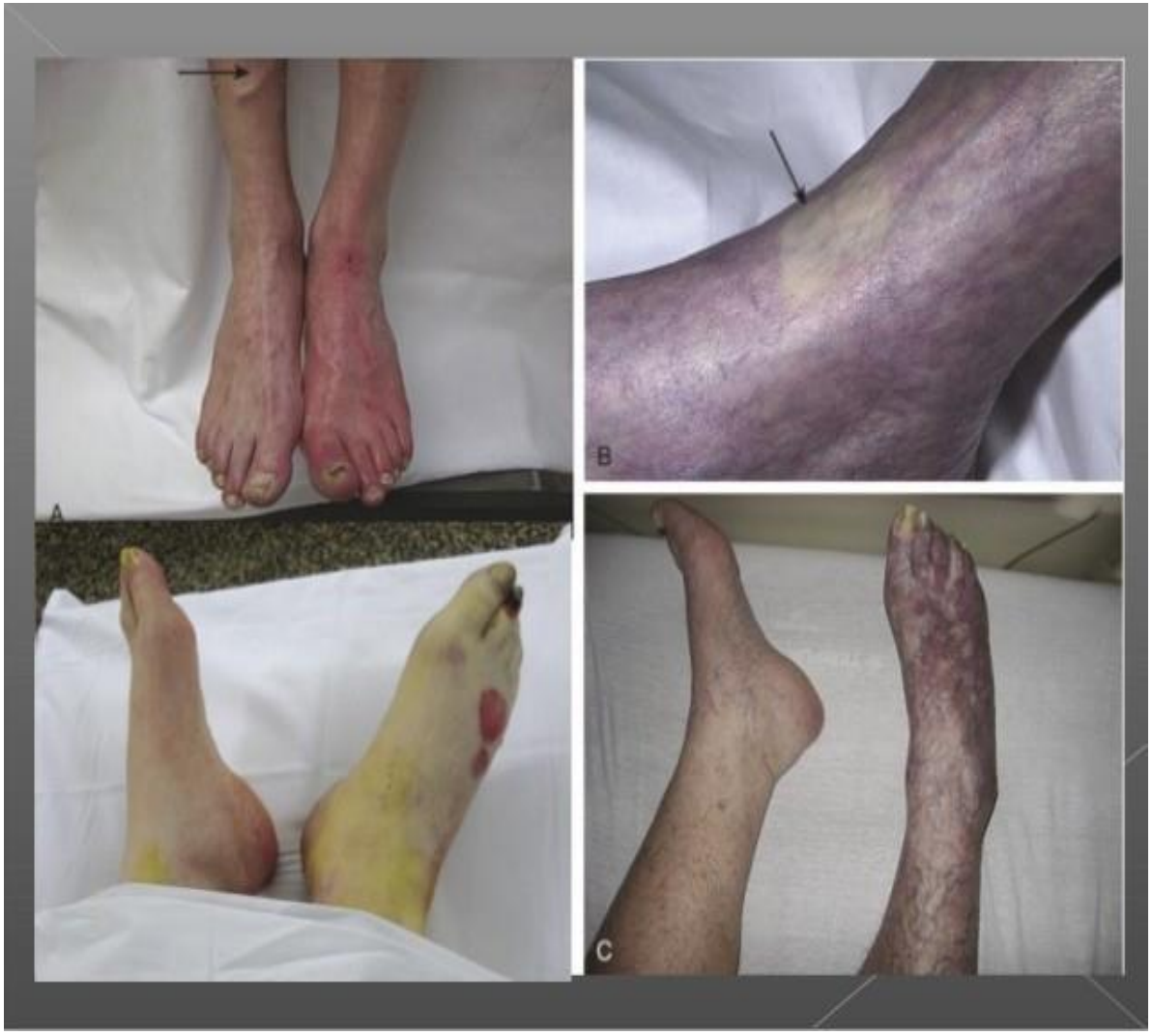
- (2) sources of emboli :-
- **A. Heart** (85%) :
- AFib is the most common cause of embolus from the heart .
- Post MI
- Endocarditis
- Myxoma
- **B. Aneurysms**
- **C. atheromatous plaque**

Embolic v.s Thrombotic Ischemia

	Embolus	Thrombosis
Onset anal severity	Acute (seconds or minutes), (no pre-existing collaterals)	Insidious (hour or days), iscnaemia less severe (pre-existing collaterals)
Emoolic source	Present (usualiy atrial fibriiiation)	absent
Previous claudication	Absent	Present
Pulses in contralateral leg	Present	absent
Diagnosis	Clinical	Aogigraphy
Treatment	Embolectomy and anticoagulation	Medical. bypass surgery, thrombolysis

Clinical features

- **Symptoms of acute limb ischaemia include (6Ps)**
- Pain ,Pallor, Pulselessness : these symptoms may be absent in complete acute ischemia and can be present in chronic ischemia
- perishing cold
- Paraesthesia and paralysis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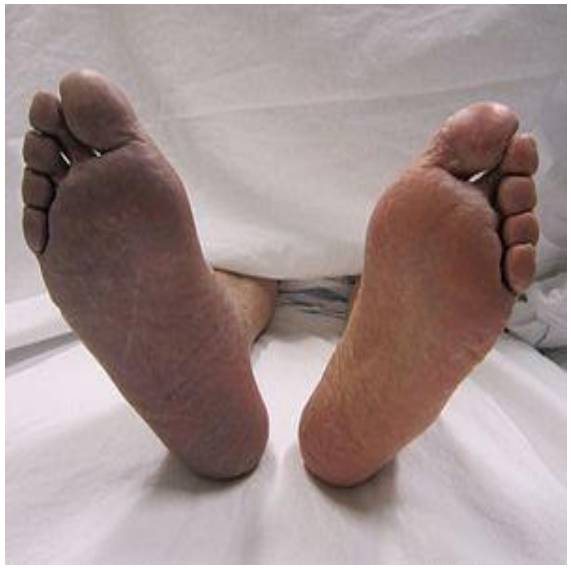
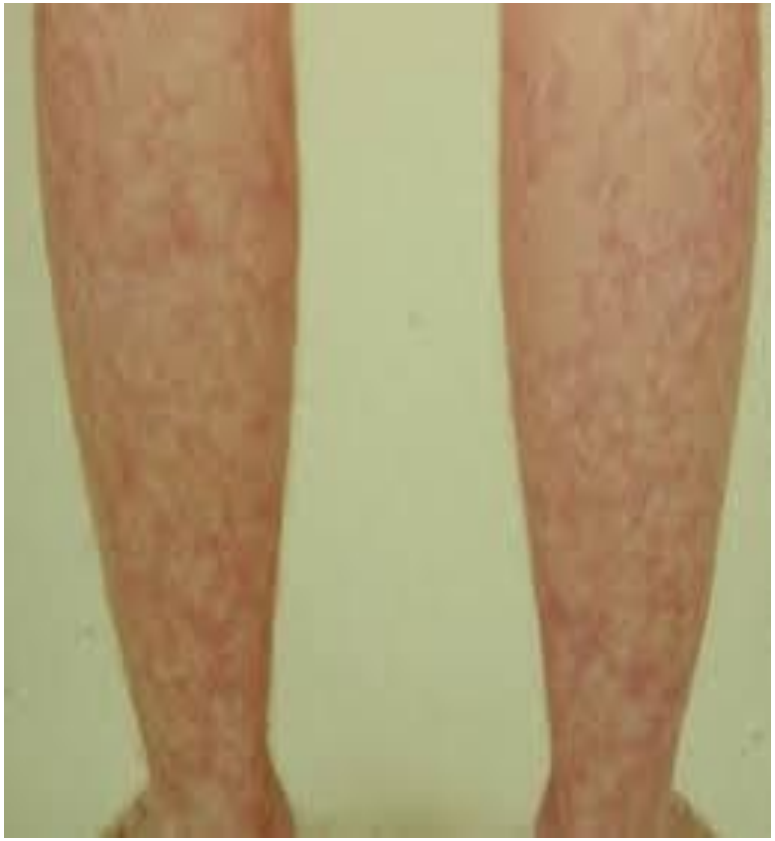
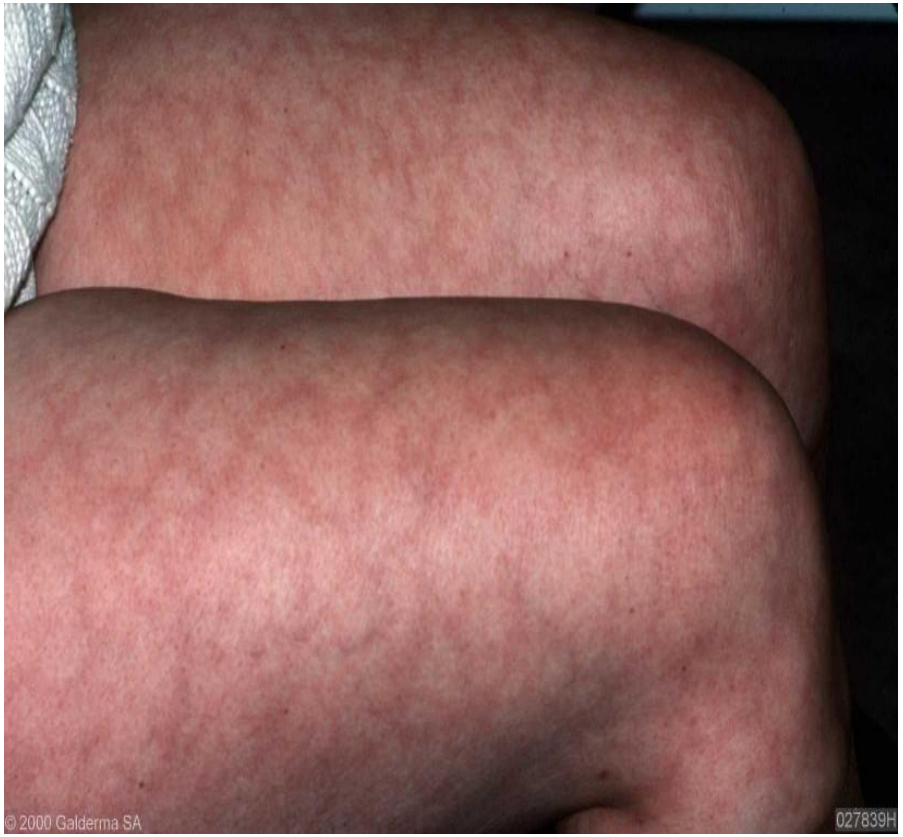


- If embolization to the more distal vessles , *livedo reticularis* may be seen .





Diagnosis

- 1- site of occlusion : To find out where the occlusion is located one of the things that can be done is simply a **pulse examination** to see where the heart rate can be detected and where it stops being sensed. Also there is a **lower body temperature below the occlusion** as well as **paleness**

A **Doppler evaluation** is used to show the extent and severity of the ischaemia by showing flow in smaller arteries .

The best initial test in diagnosis is doppler studies .

While **angiography** would be the most accurate , it is often not performed in the interests of time

.

2-**ECG** to look for MI, AFib .

Treatment

- Skeletal muscles can tolerate 6 hours of ischemia; perfusion should be reestablished within this time .
- **(1) preoperative ttt**

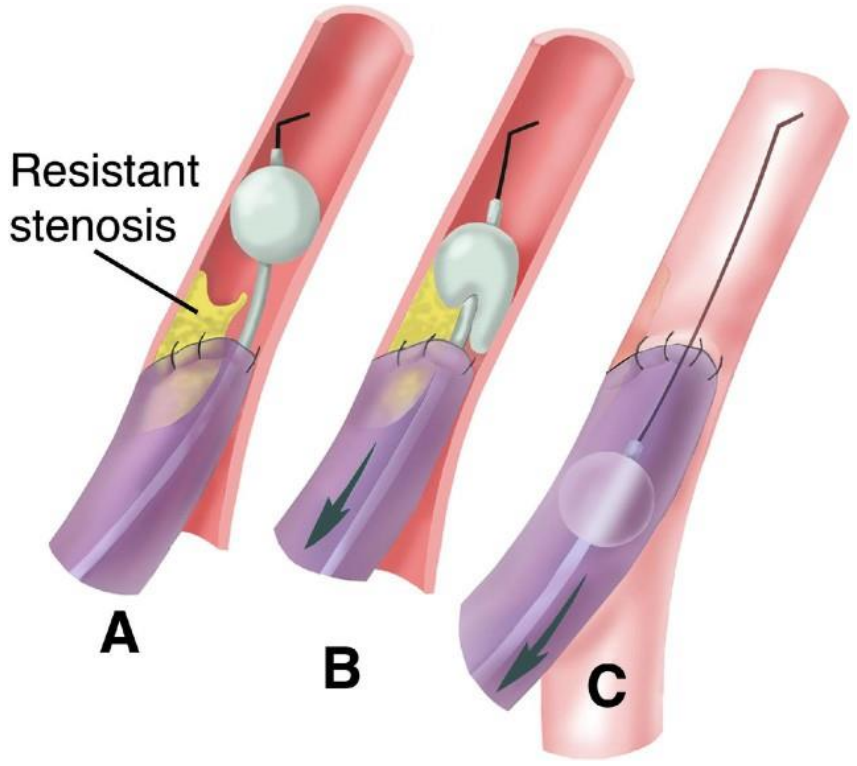
IV heparin should be adminstered unless contraindicated (hx of HIT)

alkalamization of urine is often done to protect the kidnyes from myoglobinuria (from ischemic muscles)

- **(2) operative procedure**

  emergent **embolectomy** using a **fogarty balloon catheter** , the catheter is inserted, the balloon is inflated and then the catheter is pulled out . **Vascular bypass** is reserved for embolectomy failure .

Fagorty catheter



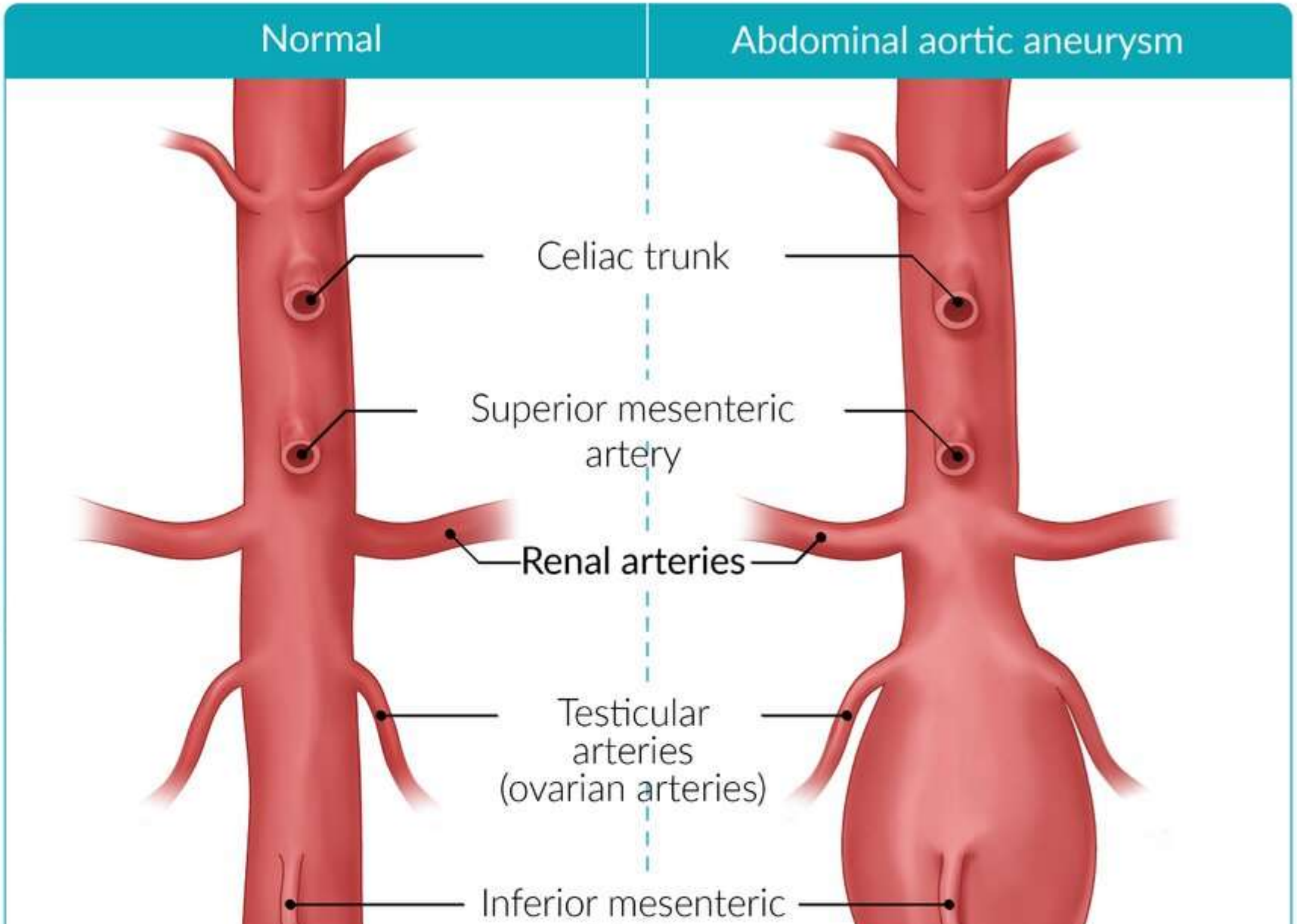
- Complictions :-
- **Compartment syndrome** due to reperfusion of the affected limb musculature, the fact that the the muscles will produce gasses and toxins and increase the pressure on the compartments .
- **Myoglubinuria** due to muscle necrosis. Dx suggested with RBCs on UA .Tx is **alkaline diuresis :** generous IV fluids and alkalanization (furosimide and bicarb aded to fluids) until urine RBCs become absent .

- Thank you

Aneurysmal diseases

Mohammed Hussain Rababah

Aneurysmal diseases

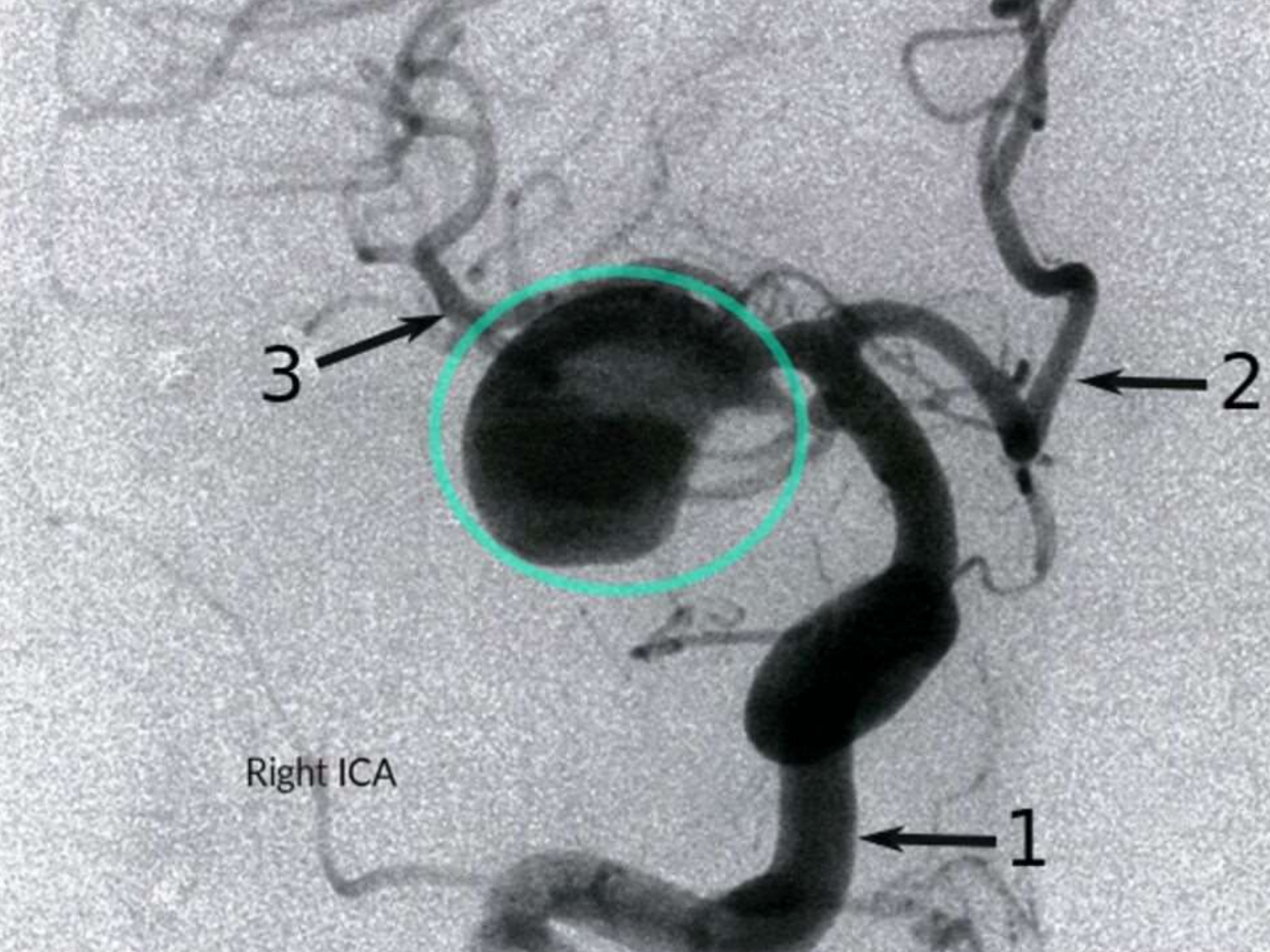


Aneurysmal diseases

- **Aneurysm** is defined if there is a localized permanent abnormal dilatation of the artery to twice the normal diameter.
  -Develops where there is marked weaking of the wall.

- Causes:
  Congenital (Berry **aneurysm** in brain).
  Infections (Mycotic,Syphilis).
  Trauma.
- systemic dz (Vasculitis).

  Complications: thrombosis,embolism,and the most important one is rupture.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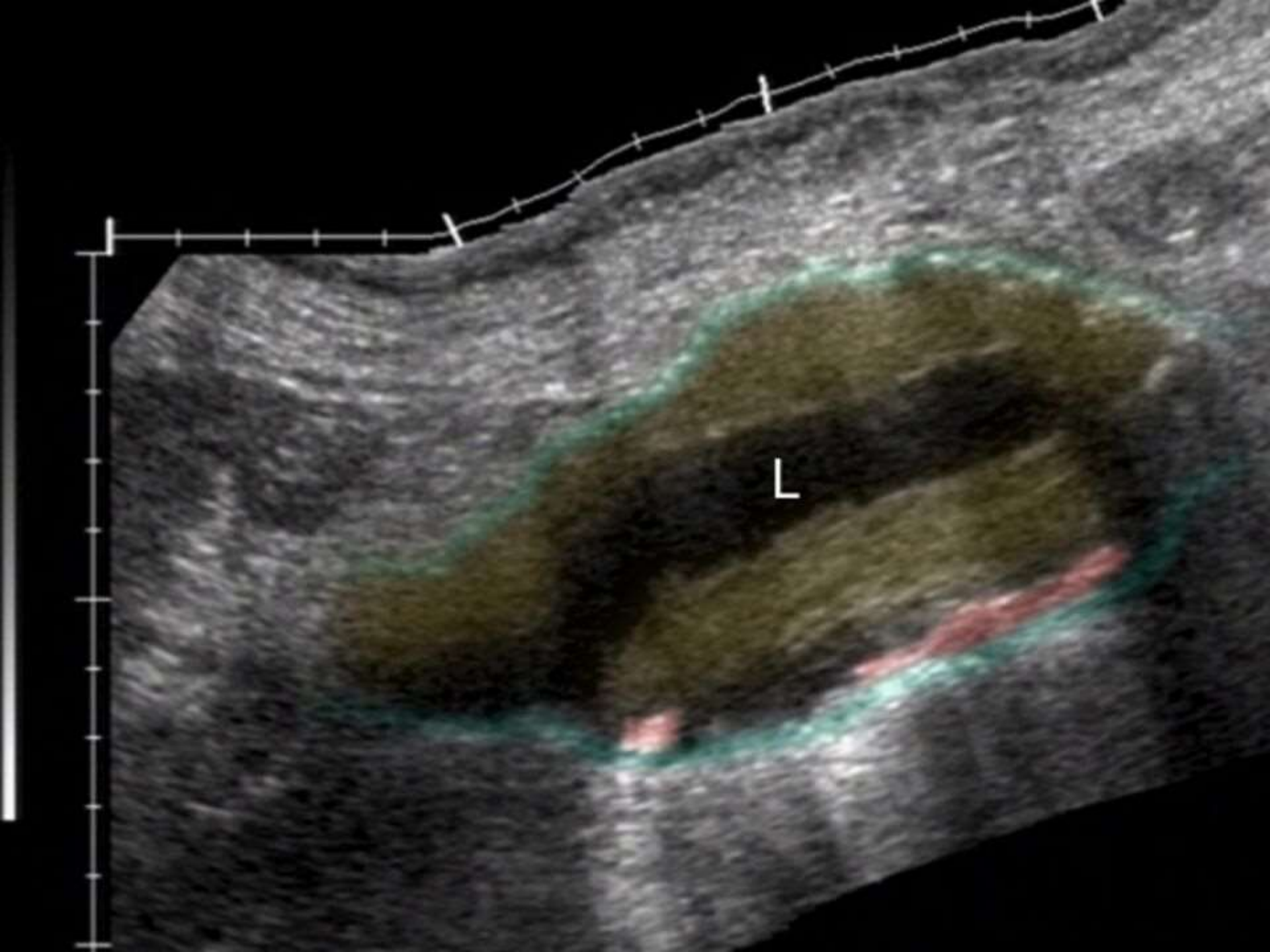
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1-Abnormal dilation of an artery due to a weakened vessel wall(Involvement of all three layers: tunica intima, tunica media, tunica adventitia)

2-False aneurysms (pseudoaneurysms)

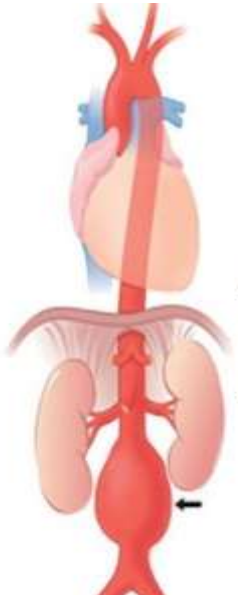
Tear in the vascular wall leading to extravascular hematoma that freely communicte with intra vascular space.

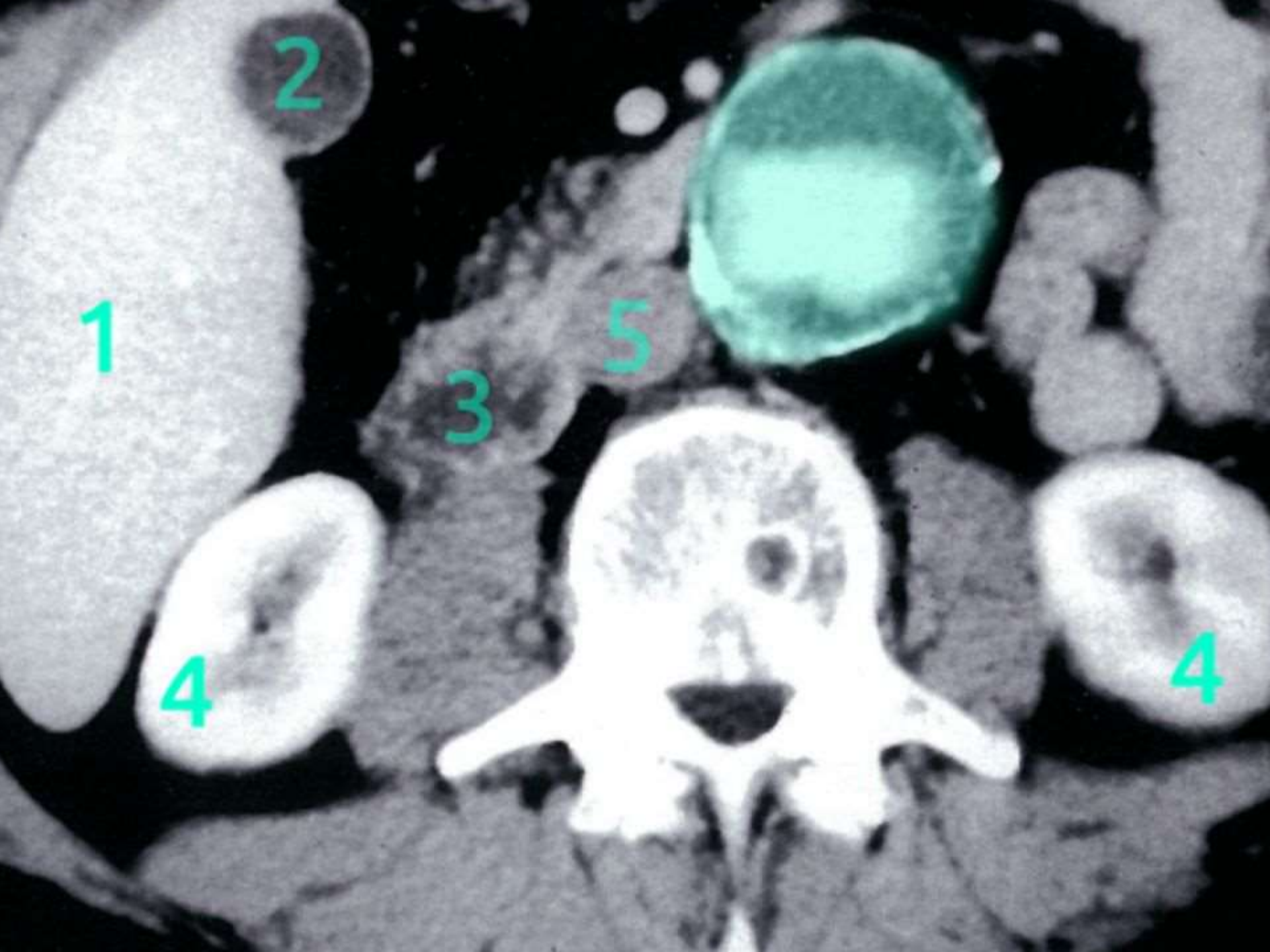
(the surrounding tissues form the wall of the aneurysm)

Abdominal aortic aneurysm

- Occur most commonly below the renal artery (infrarenal).
  Occur 5 times more frequently in men.
  The incidence increase with age.
- Aneurysms may occur secondary to **atherosclerosis**, **infection** (syphilis, *Escherichia coli, Salmonella) and* ***trauma****, or may be* ***genetic***
  (Marfan's syndrome, Ehlers–
  Danlos syndrome).

  Also other factors like hypertension,smoki

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Signs & Symptoms

- Most aneurysms are **asymptomatic** and are found on routine abdominal examination as pulsatile mass, plain X-ray or during urological investigations .

  aneurysm is suspected if a pulsatile, expansile abdominal mass is felt.

- Rapid expansion or rupture of an AAA may cause ***severe pain*** *(epigastric pain radiating to the back). A* ruptured AAA causes ***hypotension***, ***tachycardia***, ***profound anaemia*** *and* ***sudden death***.

  Ruptured AAA come with triad of abdominal pain + palpable pulsatile abdominal mass + hypotension ,also it may come with syncope secondary to sudden hemorrege,nausea and vomiting.

Management
Unruptured aneurysm

- The UK Small Aneurysm Trial showed that patients with **infrarenal AAA** did best with an operation if the aneurysm was:
- **≥5.5 cm diameter**
- **expanding >1 cm/year**
- **symptomatic**.

The operation is surgical resection with synthetic graft placement.(the infrarenal aorta is replaced with a fabric tube)

- *Open Repair of abdominal aortic aneurysm: standard therapy is open surgical repair with insertion of graft.*
- *Endovascular stent insertion via femoral or iliac artries.*
- *Laparoscopic surgery.*

- ***<u>Medical</u>***
- Patients with aneurysmal disease need **careful control of hypertension**, to **stop smoking** and to have **lipid-lowering medication**.

  Patients with **AAA <5.5 cm** are followed up by regular **ultrasound surveillance to follow up growth,but remember no "safe" size exists,and small AAA can rupture.**

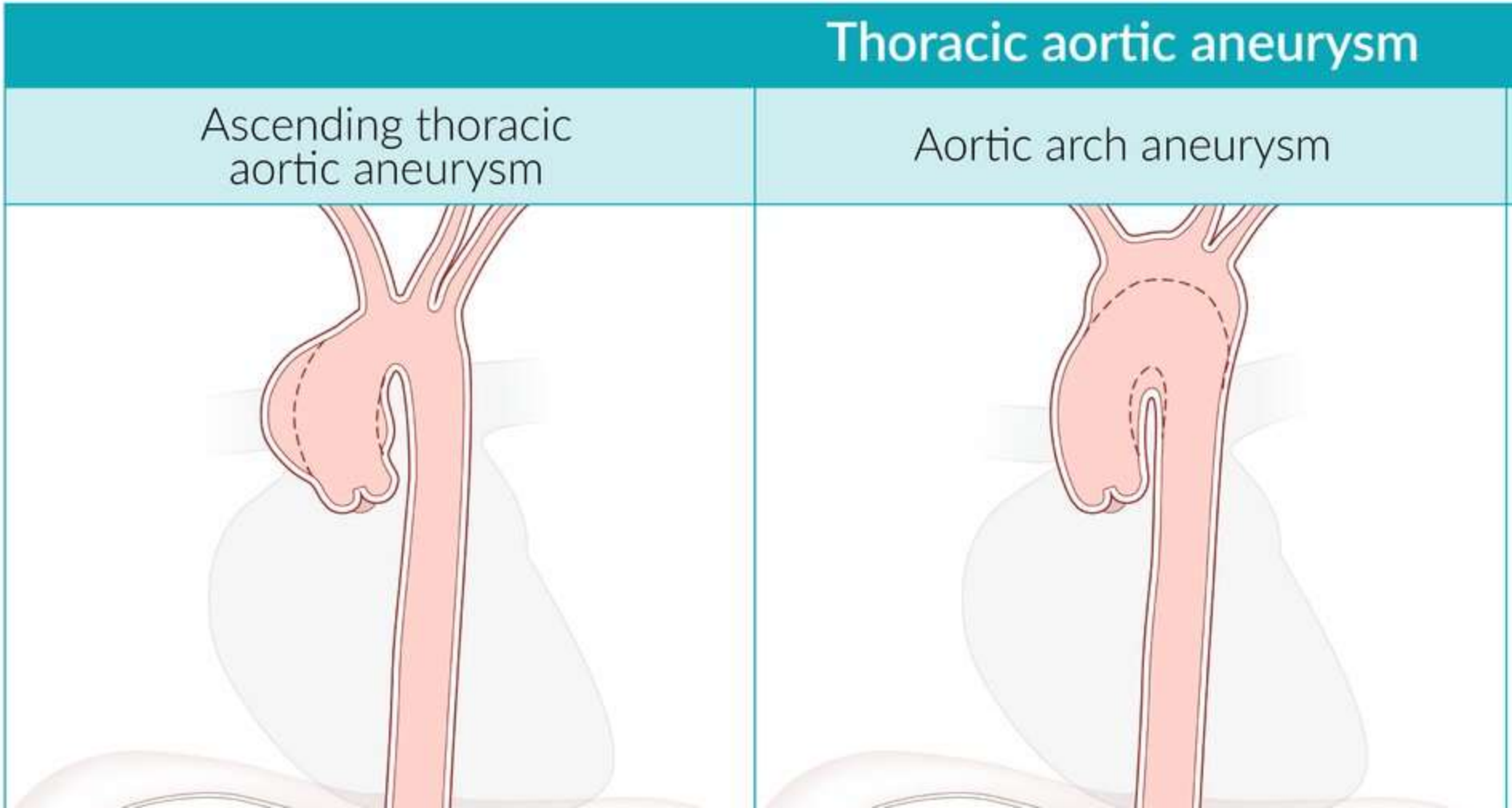
  After repair, patients with an AAA should return to normal activity within a few months.

2- Ruptured aneurysm

- Emergency surgical repair is indicated and all of these pts are not stable

  open repair + endovascularly

Thoraco-abdominal aneurysm (TAA)



- The **ascending, arch or descending thoracic aorta** may become aneurysmal. **Ascending TAAs** occur most commonly in patients with **Marfan's syndrome or hypertension**. **Descending or arch TAAs** occur **secondary to atherosclerosis** and are now rarely due to syphilis
- **<u>Signs & Symptoms</u>**
- Same as AAA+ chest symptoms : stridor(compressed bronchial tree) , haemoptysis and hoarseness (compressed recurrent laryngyal nerve).

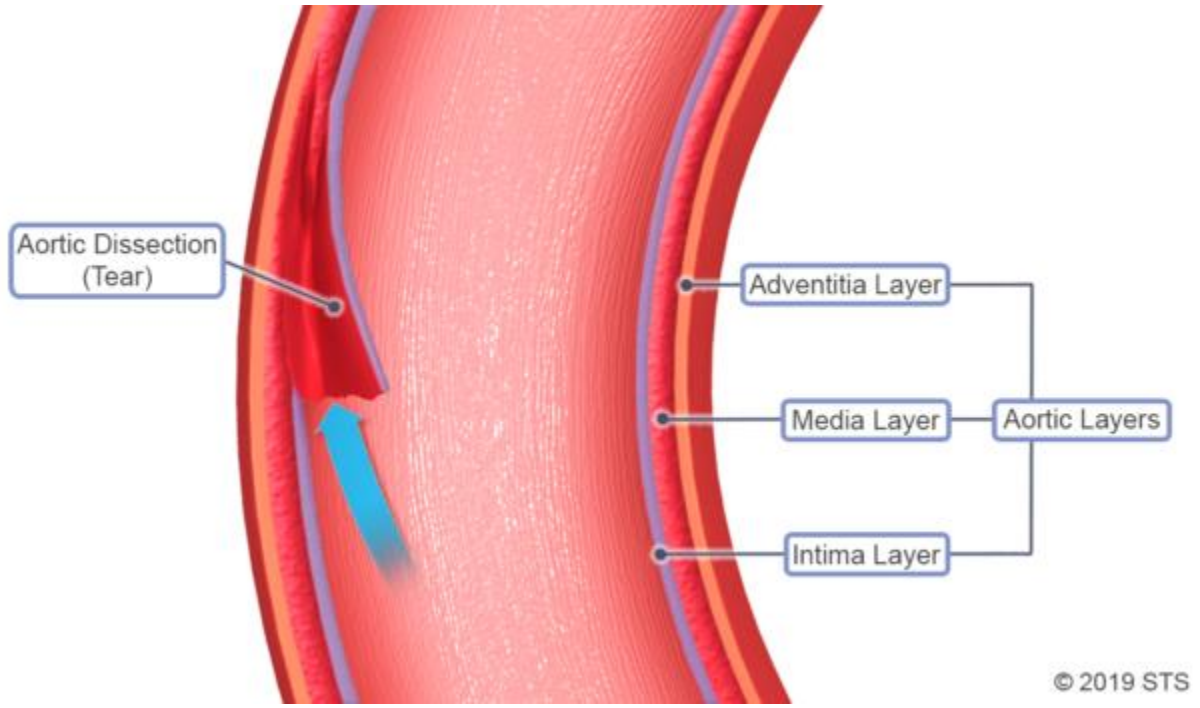
Investigations

- ***CT or MRI scans*** *are used for assessment of a TAA.*
- ***Aortography***
- ***Transoesophageal echocardiography*** *can be helpful* by identifying an aortic dissection

Management

- If the **aneurysm is >6 cm** then **operative repair** or **stenting** may be appropriate, but these can be technically difficult and carry a high risk of mortality and paraplegia. **EVAR** is at present the procedure of choice for isolated descending thoracic aneurysms.

Aortic Anatomy



1. Largest elastic artery (internal elastic, external elastic lamina)

Intima, Media (maintains integrity of the vessel), adventitia (vasavasorum)

2. Pathophysiology (Media weakness , prone to dissection …)

The most common pathology for the weakening of the aortic wall is cystic medial degeneration

Degeneration of the collagen and elastic fibers in the tunica media and the loss of smooth muscle cells which are replaced by mucoid material.

(**Collagen linking defects leading to deposition of basophilic ground substance in the media**, creating cyst-like lesions that weaken the artery wall)

The initiating event is primarily an intimal tear, then a secondary dissection into the media

Or

Medial hemorrhage which may dissection into the aortic lumen

Risk factors and relation to the pathophysiology of the disease

1. A patient (40 – 60 years old) longstanding hypertension

Vasavasorum hypertrophy which leads to decreased blood supply to adventitia and media …necrosis of smooth muscle cells

2. A patient (< 40 years old) connective tissue disorders mainly (Marfan syndrome) defect in fibrillin synthesis …. Leads to production of weak elastic tissue

Dilated aortic root ….aortic regurgitation

Ehlers-Danlos Syndromes (defect in collagen synthesis especially type 4 collagen)

Vit c deficiency , defect in copper metabolism

3.Rare cause sich 3rd trimester pregnancy (plasma volume is increased which will lead to an increase in systolic hypertension so the aorta is prone to an intimal tear .

Others

4. Bicuspid aortic valve

5.Turner Syndrome (bicuspid, coarctation)

6.Tertiary syphilis: Aortitis

*Aortic dissection is not related to atherosclerosis but rather it's a protective phenomenon, because fibrosis and medial scarring prevents from spread of dissection

Clinical features are related to how the dissection propagates

Propagation

1. Propagation to aortic root

- Aortic regurgitation
- Pericardial effusion/tamponade
- Myocardial ischemia (obstruction RCA origin)

2. Propagation to aortic arch

- Stroke (carotids)
- Horner's syndrome
- Vocal cord paralysis

3. Propagation to distal aorta (type B)

- Limb ischemia
- Mesenteric ischemia
- Renal failure

Classification of aortic dissection

			
Percentage	60%	10–15%	25–30%
Type	DeBakey I	DeBakey II	DeBakey III
	Stanford A (Proximal)		Stanford B (Distal)

Stanford classification

- Group A – includes DeBakey Types I and II and involves the Ascending aorta and can propagate to the aortic arch and descending aorta; the tear can originate anywhere along this path(before the left subclavian artery)

- Group B –involves only descending Aorta and include DeBakey Type III (after the left subclavian artery)

Type B: medical therapy . Blood pressure control

Beta-blockers: IV esmolol or labetalol IV vasodilator (Nitroprusside)

DeBakey Classification

- Type I – originates in the ascending aorta and propagates at least to the aortic arch

  They are typically seen in patients under 65yrs and carry the highest mortality, quoted at 1% per hour in the acute setting.

- Type II – confined to the ascending aorta

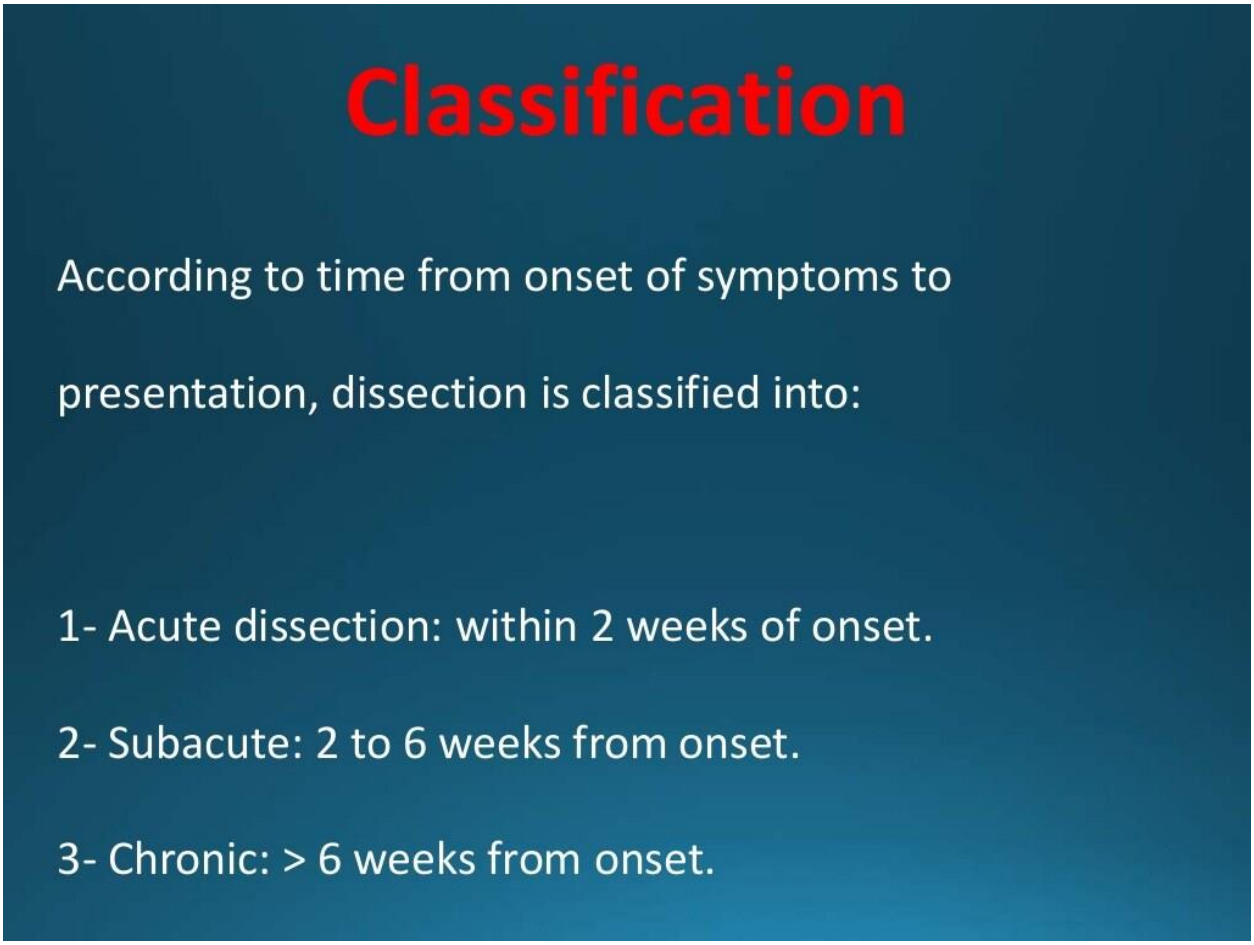
  Classically in elderly patients with atherosclerotic disease and hypertension

- Type III – originates distal to the subclavian artery in the descending aorta

  Further subdivided into IIIa which extends distally to the diaphragm and IIIb which extends beyond the diaphragm into the abdominal aorta

  - Over all 90% of AOD are 10 cm from the aortic valve
  - Most common site of tear is 2 cm above the aortic roots were the pericardium is connected which leads us that the most common complication of AOD is cardiac tamponade.
  - Endovascular intervention with stents may be indicated in patients with rapidly expanding dissections (>1cm/year), critical diameter (>5.5cm), refractory pain or malperfusion syndrome, blunt chest trauma, penetrating aortic ulcers or IMH. Patients will require long-term follow-up with CT or M

Durational classification



Signs and symptoms

Abrupt onset severe tearing, knifelike pain ant or post dissection mid-scapular chest pain, with sob, syncope, nausea, hypotension,

Asymmetric (20 mmHg) bilateral BP or radial pulse

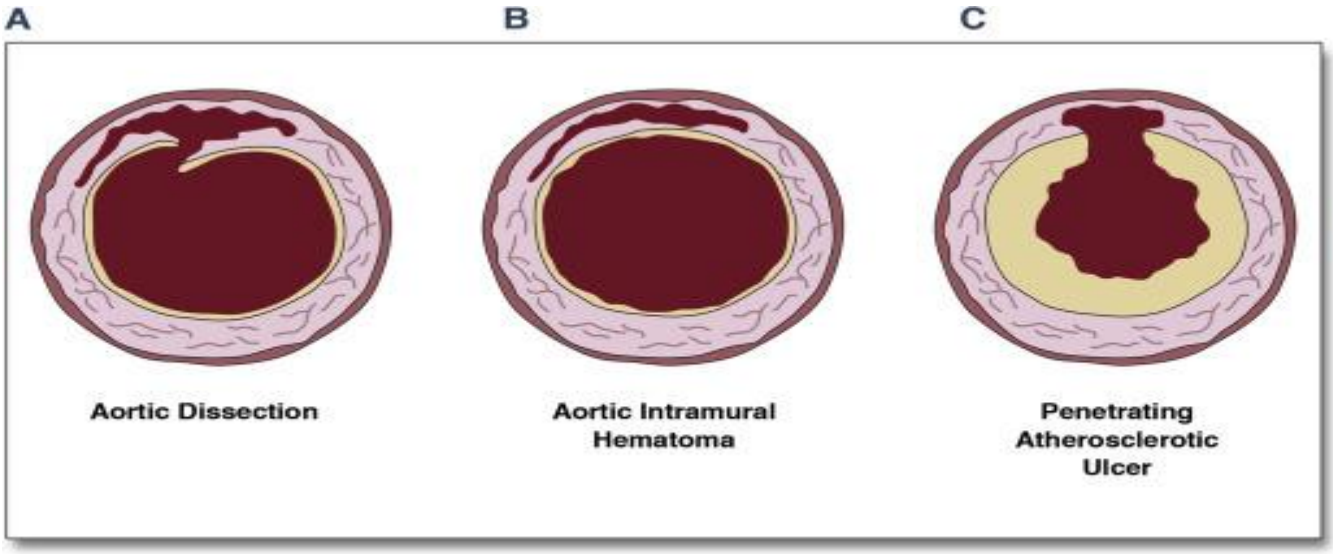
Investigations

❑ the mediastinum may be widened on chest Xray (more than 8mm on AP view)

❑ CT scan, transesophageal echocardiography , MRI

Intramural hematoma (IMH): (has a high rate of rupture)

(contained hematoma within the aortic wall)



Hematoma formation within the aortic wall in the absence of a detectable intimal tear.

Vasavasorum rupture → medial hemorrhage that does not communicate with aortic lumen; (may extend into the lumen and dissect it)

6% of aortic syndromes; clinically managed as AoD

Penetrating ulcer:

Erosion of the intimal plaque into the media

atherosclerotic plaque penetrates elastic lamina → medial hemorrhage

may lead to dissection or IMH .

Peripheral venous disease
Vein thrombosis

Hanan Omar Alashqar
SEREEN AZEM AWAD

Venous thrombosis:

- Thrombosis is the formation of a blood clot inside a blood vessel, obstructing the flow of blood through the circulatory system, when it affects a vein it will lead to congestion of the affected part of the body.

- The most common sites of venous thrombosis are the veins of the legs or the pelvis, but they can occur in any vein in the body.

What is phlebitis?

Phlebitis is a term used to describe veins that are painful, red and inflamed.

What is thrombophlebitis?

Thrombophlebitis means there is a blood clot in the vein (thrombosis or thromboembolism) that causes swelling and pain.

Superficial thrombophlebitis:

Superficial thrombophlebitis: if the vein that has the clot is just under the skin, it is called a superficial venous thrombosis or superficial thrombophlebitis. This type of clot does not usually travel to the lungs unless it reaches the deep veins. But, superficial thrombophlebitis can be painful and treatment may be needed.

- In upper limps it usually occurs at the site of an iv infusion.

- In lower limps usually associated with varicose veins:Are twisted, enlarged veins

What causes superficial thrombophlebitis?

Superficial thrombophlebitis can be caused by an injury to the arm or leg; having an intravenous (IV) line; or the cause may not be known.Potential risk factors are the same as for those who have deep vein thrombosis (DVT), and include:

•An inherited (family) condition that increases your risk of blood clots

•Cancer and some cancer treatments (chemotherapy)

•Limited blood flow because of an injury, surgery, or not moving
•Long periods of inactivity that decrease blood flow, such as:
- Sitting for a long time, such as in a car, truck, bus, train or airplane
- After surgery or a serious injury

•Pregnancy and the first 6 weeks after giving birth

•Being over age 40 (although clots can form at any age)
•Being overweight
•Taking birth control pills or hormone therapy, including for treatment for postmenopausal symptoms
•Placement of a central venous catheter or pacemaker

What are the signs symptoms of thrombophlebitis?

Swelling of the leg or arm (sometimes this happens suddenly)

Pain or tenderness in the area of the clot

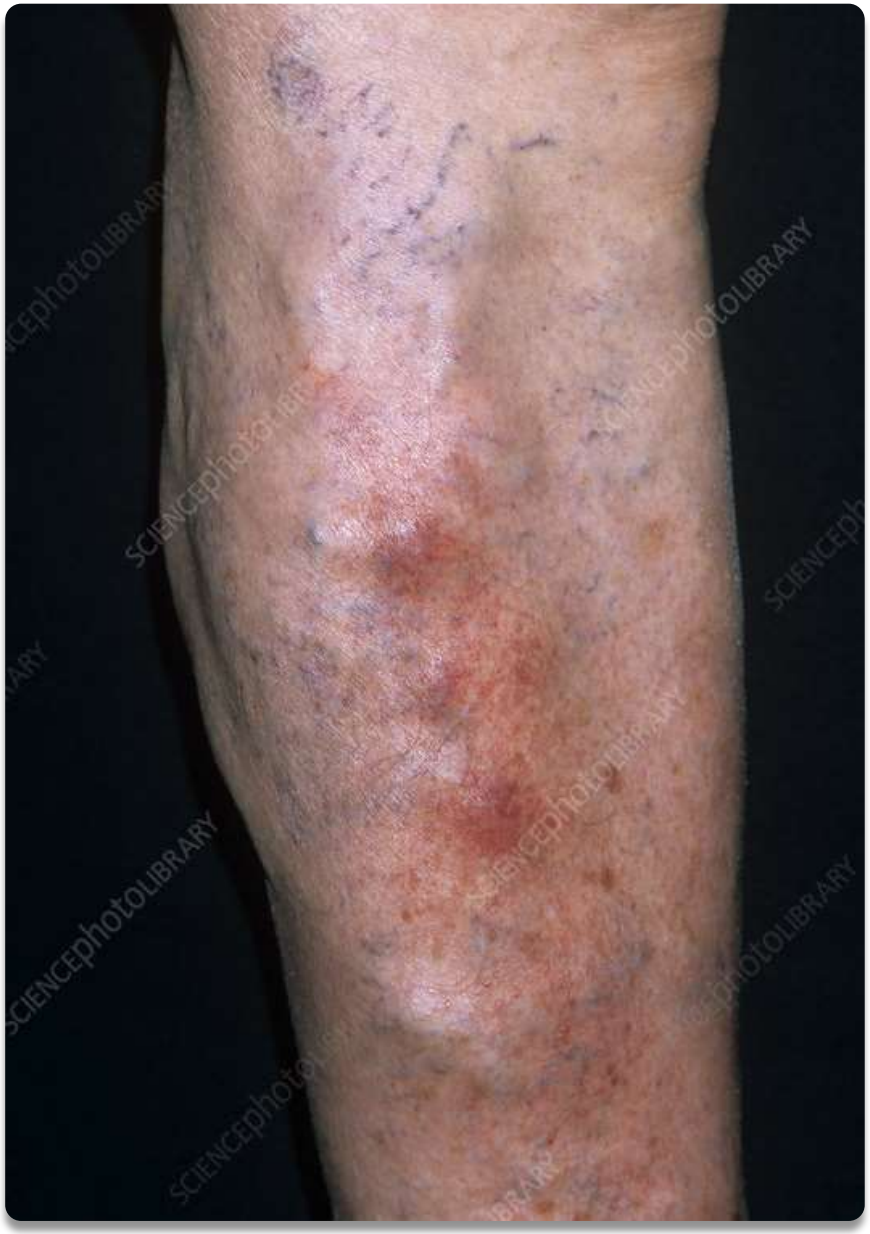
Feeling of increased warmth in the area of the clot

Red or discolored skin in the area of the clot

Induration:

What is skin induration?

Skin induration is a deep thickening of the skin that can result from edema, inflammation, or infiltration, including by cancer. Diagnosis of skin induration is made by palpation (feeling the area) and assessing whether the raised area has a hard, resistant feeling.



How is superficial thrombophlebitis diagnosed?

- Your doctor may suspect that you have superficial thrombophlebitis based on a physical exam. But, a vascular ultrasound is needed to confirm the diagnosis. An ultrasound is also important because about 20% of people with superficial thrombophlebitis also have a DVT.
- Many times, patients who have superficial thrombophlebitis wait to see a doctor, thinking they have a muscle strain or sprain. In fact, without an ultrasound, the doctor may also think the problem is related to a muscle.

What are the treatment options for patients with superficial thrombophlebitis?

- The main goal when you begin treatment for superficial thrombophlebitis is to control pain and inflammation.
- Treatment includes:
- **For pain:**
- Nonsteroidal anti-inflammatory pain medication (NSAIDs) such as ibuprofen
- Warm compresses
- **For inflammation and swelling:**
- Leg elevation when you are resting
- Compression stockings
- Staying active and not sitting for too long

Other medical treatments:
Most times, treatment for patients with superficial thrombophlebitis includes only ways to manage pain and inflammation. But, if you are at risk of developing a DVT or have problems that affect the way your blood clots, you will likely need to take anticoagulation medication. In most cases, superficial thrombophlebitis clears up within a few weeks.

When is surgery necessary for phlebitis?

- If you have superficial thrombophlebitis and varicose veins The combination of these conditions puts you at greater risk of having superficial thrombophlebitis after the condition clears up. The best way to reduce this risk is to use surgery or endovenous therapy to take care of the varicose veins and keep them from returning.

Prevention:

Sitting during a long flight or car ride can cause your ankles and calves to swell and increases your risk of thrombophlebitis. To help prevent a blood clot:

Take a walk. If you're flying or riding a train or bus, walk up and down the aisle once an hour or so. If you're driving, stop every hour or so and move around.

Move your legs regularly. Flex your ankles, or carefully press your feet against the floor or footrest in front of you at least 10 times each hour.

Drink plenty of water or other nonalcoholic fluids to avoid dehydration.

DEEP VEIN THROMBOSS

- **Deep vein thrombosis** (DVT) : is the formation of a blood clot in a deep vein.
- Thrombosis occurs most commonly in the legs or pelvis, but is particularly found in veins of the calf.
- **Causes of DVT:** (Virchow triad)

1. **BLOOD STASIS**

Prolonged immobilization for three days or more: long flights, bed ridden patient (postoperative, paralysis, elderly)

2. **ENDOTHELIAL DAMAGE**

a) Hypertension.
b) Medical devices or implants .
c) Homocystenemia (damages the wall of vessels).

3.HYPERCOAGUBILITY

a) Increased platelet count
b) Factor V leiden
c) Deficiency of protein C and S
d) Deficiency of anti-thrombin III
e) Nephrotic syndrome

SIGNS AND SYMPTOMS

- about half people with DVT are asymptomatic
- The major presenting feature is pain.
- Other important signs:

1. swelling of the calf
2. redness
3. Palpable cord (dilated superficial veins)
4. the affected calf is warmer
5. Homan's sign(calf pain on ankle dorsiflexion)
6. Pitting ankle edema(Thrombus -> prevents drainage of veins -> blood pooling distal to the obstruction-> increase hydrostatic pressure ->transudate -> pitting edema.)

DVT

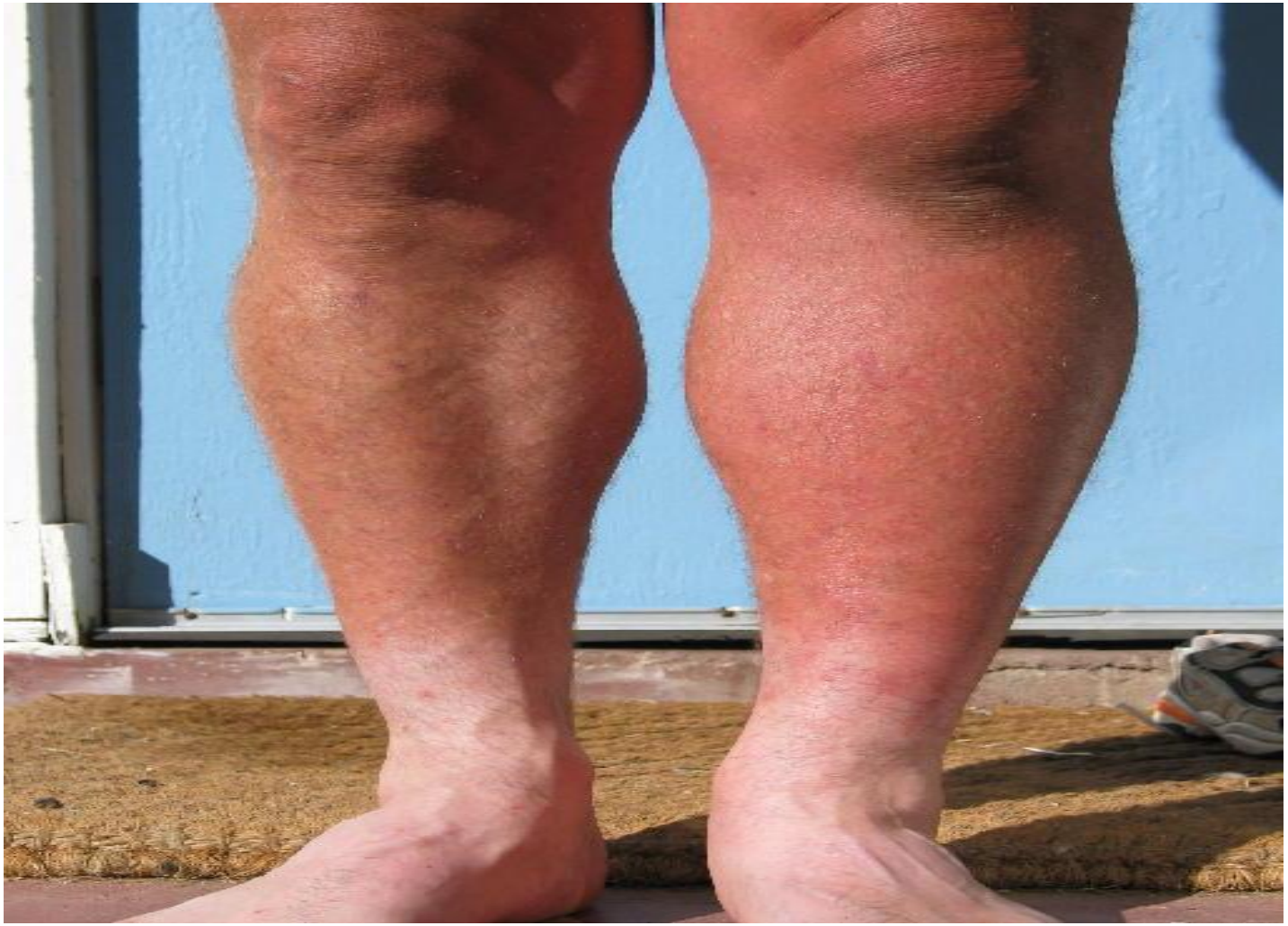


Table 1

Modified Wells Criteria: Clinical Evaluation Table for Predicting the Probability of a DVT

Clinical Characteristic(s)	Score
Active cancer	+1
Paralysis, paresis, or recent plaster immobilization of the lower extremities	+1
Recently bedridden for three days or major surgery within the last 12 weeks	+1
Localized tenderness along the deep venous system	+1
Entire leg swollen	+1
Calf swelling ≥ 3 cm larger than asymptomatic side	+1
Pitting edema confined to symptomatic leg	+1
Collateral superficial veins	+1
Previously documented DVT	+1
Alternative diagnosis at least as likely as a DVT	-2
Clinical Probability of DVT	**Total Score**
Likely	< 2
Unlikely	≥ 2

COMPLICATIONS OF DVT

- 1. Pulmonary embolism
- In patients with DVT there may be detachment of the clot, and it may travel to the lungs and lead to pulmonary embolism
- **PE** is the most common complication of DVT and can be life threatening.
- The patient presensts with :Sudden shortness of breath
- Unexplained sharp chest pain
- Cough with or without bloody sputum (mucus).
- Pale, clammy or bluish-colored skin.
- Rapid heartbeat (pulse).
- Excessive sweating.

COMPLICATION OF DVT

2. **(Post-thrombotic syndrome)**

- damage to the venous valves from the thrombus itself. This valvular incompetence combined with persistent venous obstruction from thrombus increases the pressure in veins and capillaries. Venous hypertension induces a rupture of small superficial veins, subcutaneous hemorrhage and an increase of tissue permeability. That is manifested by pain, swelling, discoloration, and even ulceration.

INVESTIGATIONS

- Imaging: -
- Doppler ultrasound (high sensitivity and specificity for proximal thrombi popliteal and femoral)
- Venography (most accurate test for diagnosis of DVT of calf vein)
- • D-dimer test: used to rule out the presence of a thrombus, a positive result doesn’t confirm the condition, but a negative result can rule out DVT.

TREATMENT

- Anti-coagulants: especially for thrombus above the knee to prevent the risk of pulmonary embolism.
- DVTs are treated with low molecular weight heparins, and they are preferred over unfractionated heparins because they don't require monitoring and there is less risk of bleeding.
- Warfarin is started immediately and the heparin stopped when the INR is in the target range(2.5). The duration of warfarin treatment is debatable – 3 months is the period usually recommended.
- Recurrent DVTs need permanent anticoagulants.
- The patient should rest until he is completely anticoagulated, then he should start to walk.

VASCULITIS

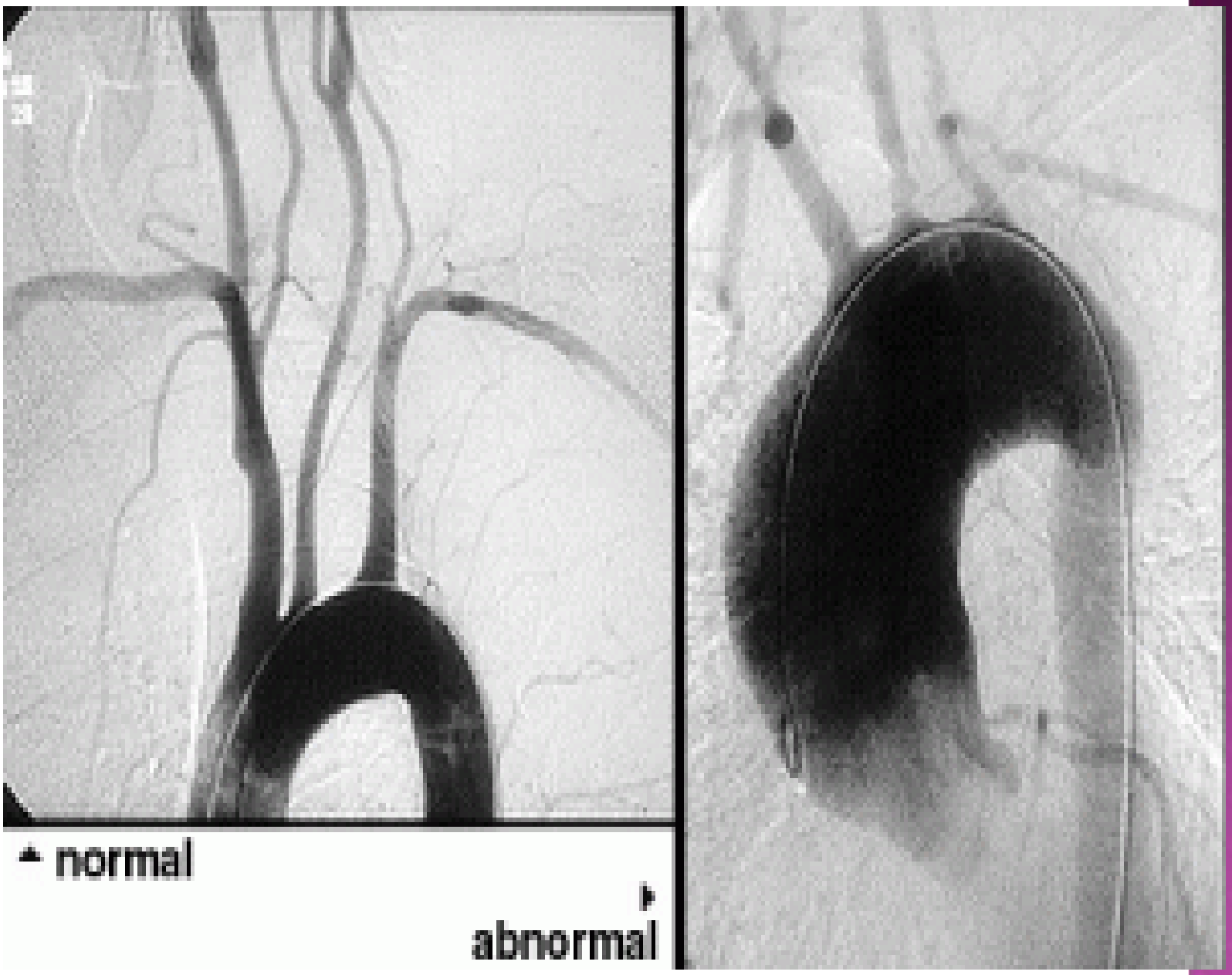
VASCULITIS

- Vasculitis is a general term for several conditions that cause inflammation in the blood vessels.
- Vasculitis can have general symptoms like fever, loss of appetite, weight loss, and fatigue.
- It can also cause specific problems, depending on the body part that's involved.
- Types of vasculitis based on the size of the blood vessels involved:

1. **Large :** Takayasu arteritis
2. **Medium :**Buerger's disease , Kawasaki disease
3. **Small :** cutaneous vasculitis

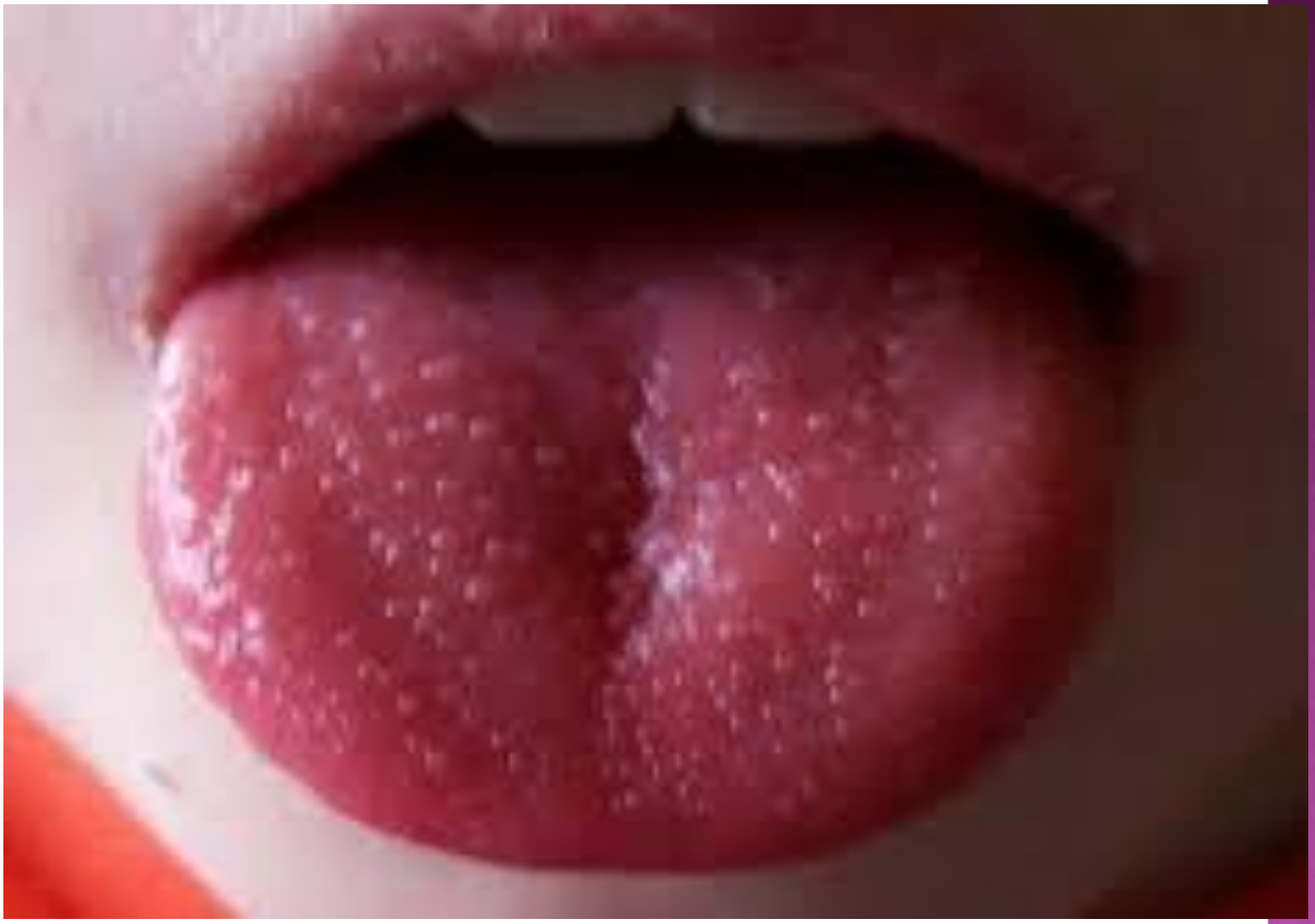
TAKAYASU ARTERITIS

- Takayasu arteritis is a rare, systemic, inflammatory largevessel vasculitis of unknown etiology .
- Characterized by granulomatous inflammation of the vessel wall mainly (aorta and its major branches) leading to fibrosis and narrowing of blood vessels .
- Most commonly affect young Asian female ,M/F ratio 1:8
- The patient may have fever, fatigue, aortic incompetence and may suffer from complications such as aneurysms, stroke and secondary HTN


normal
abnormal

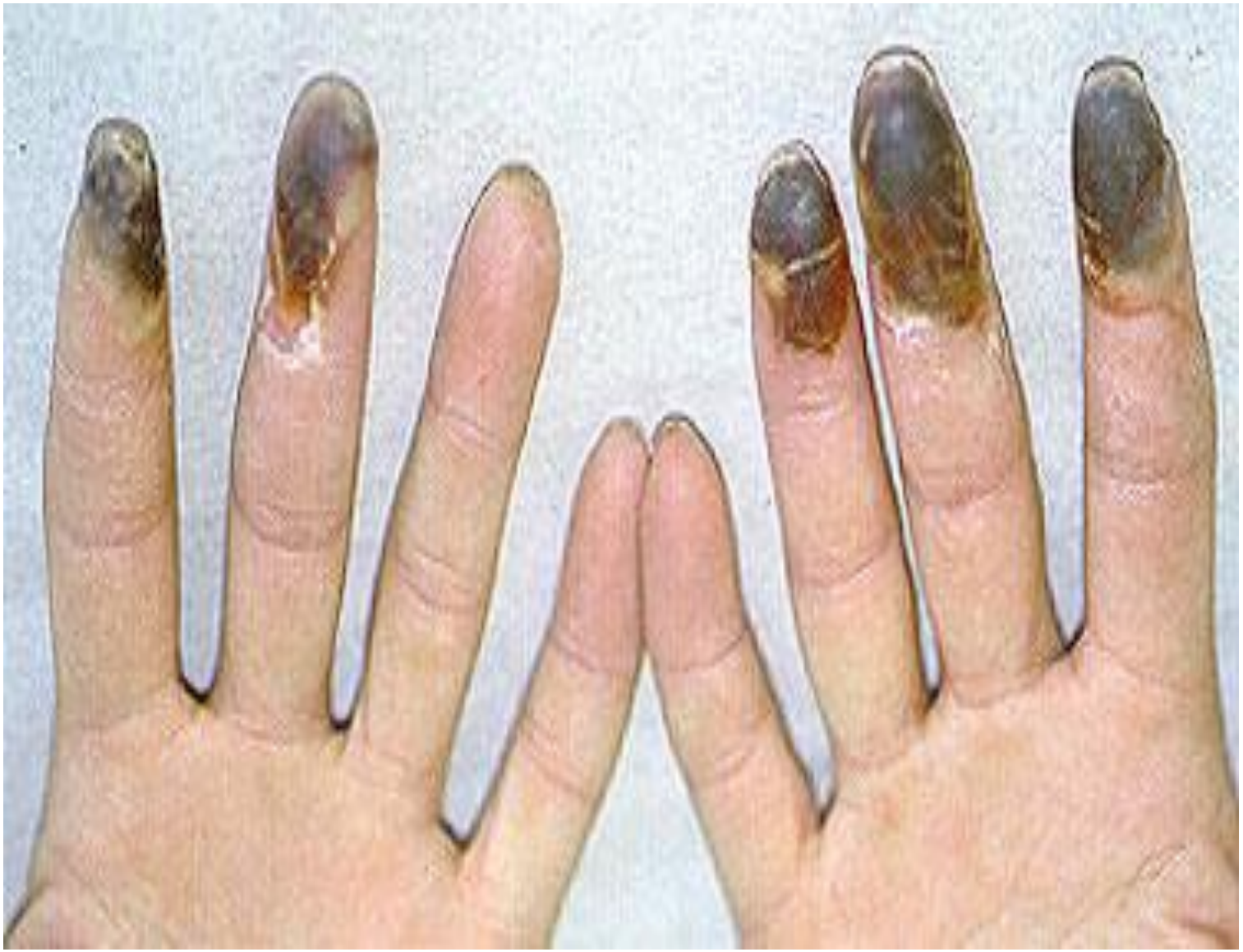
KAWASAKI DISEASE

- Kawasaki disease also known as mucocutaneous lymph node syndrome, is a disease in which blood vessel become inflamed mostly (coronary vessels).
- the cause is unknown but it is thought to be an abnormal immune response to an infection.
- Usually affect children under 5 years . It occurs mainly in Japan ,China and Korea.
- the patient presents with fever ,generalized rash ,strawberry tongue, inflamed oral mucosa and conjunctival injection .
- Cardiovascular complications include coronary arteritis leading to MI, myocarditis and pericarditis .



BUERGER'S DISEASE

- Buerger's disease is a rare disease of the small-medium size arteries in the arms and legs. In Buerger's disease your blood vessels become inflamed, swell and can become blocked with blood clots (thrombi).
- occurs in young men who smoke.
- It may affect veins causes superficial thrombophlebitis .
- Clinically, it presents with severe claudication and rest pain and may lead to gangrene .
- It often remits if the patient stop smoking.



RAYNAUD'S PHENOMENON OR RAYNAUD'S DISEASE

- Raynaud's phenomenon is a medical condition in which spasm of arteries cause episodes of reduced blood flow. Typically, the fingers, and less commonly the toes and Rarely, the nose, ears, or lips .
- This common disorder affects 5-10% of young women , it rarely progress to ulceration or infarction .
- There are tow main types of Raynaud's phenomenon primary when the cause is unknown ,secondary Raynaud's can occur due to a connective-tissue disorder , such as scleroderma or lupus , smoking, thyroid problems, and certain medications

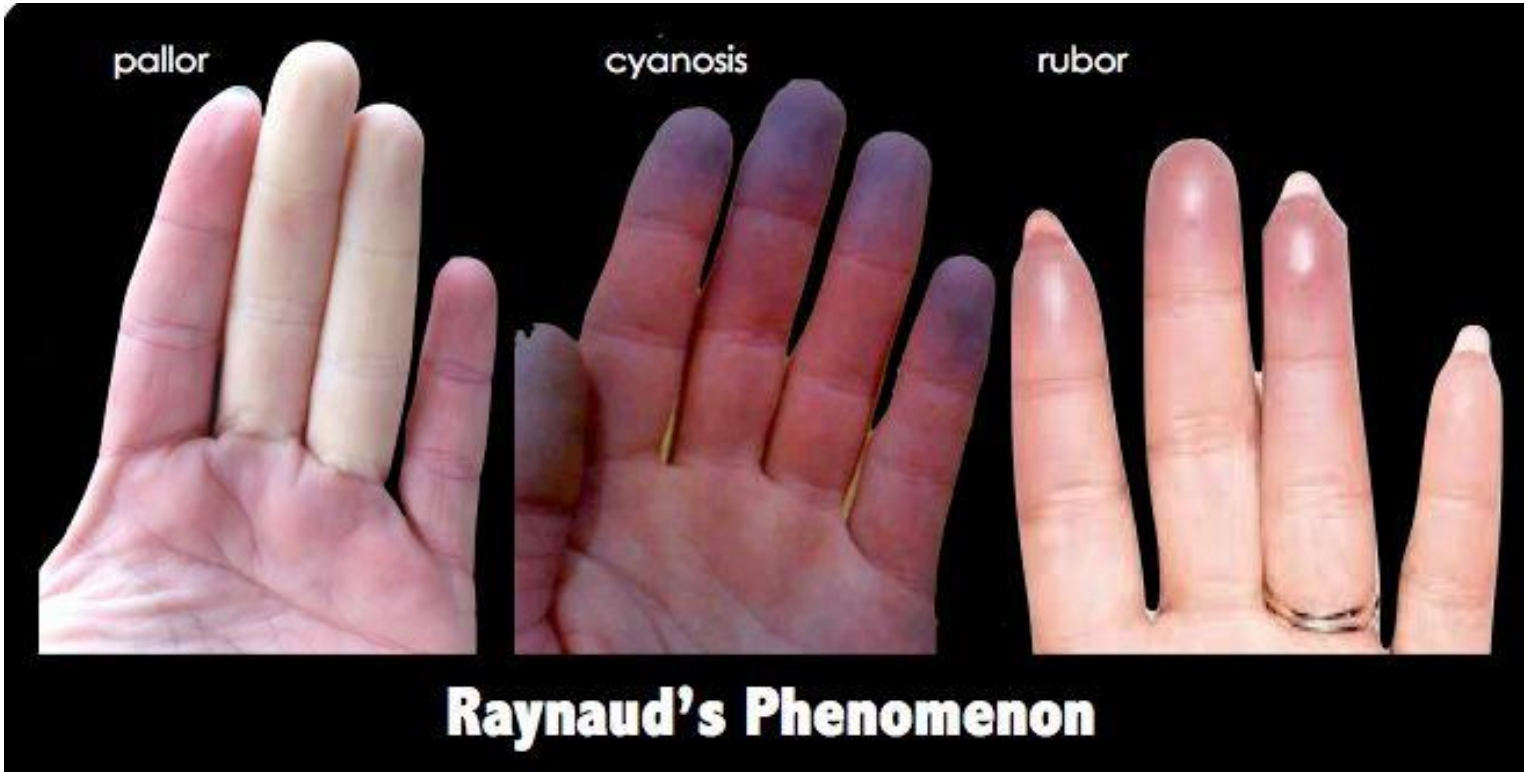
SYMPTOMS AND MANAGEMENT

- Color changes in digits:

1. Pallor
2. Cyanosis
3. Erythema

- The duration of the attacks is variable.
- Numbness, a burning sensation and severe pain occur as the fingers warm up. In chronic, severe disease tissue infarction and digital ulceration.

- Management:
- Patient should avoid cold by wearing gloves and warm clothes , patient should stop smoking .
- nifedipine may be helpful in sever cases.



THANK YOU