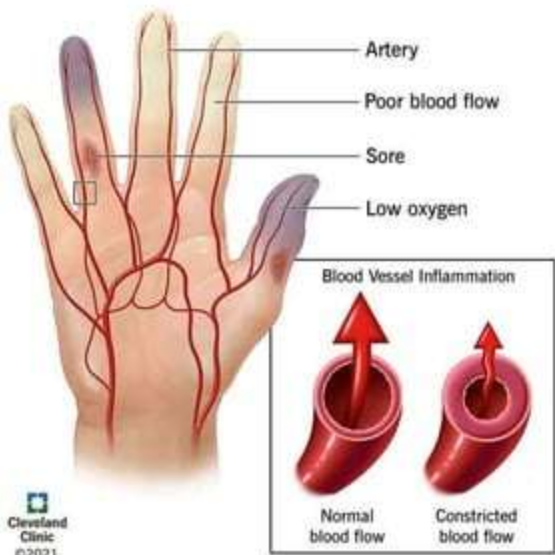


Buerger's Disease (Thromboangiitis Obliterans)

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Thromboangiitis Obliterans (TAO)

- Segmental, progressive, occlusive, inflammatory disease of small and medium sized vessels with superficial thrombophlebitis often may present as Raynaud's phenomenon with micro abscesses, along with neutrophil and giant cell infiltration, with skip lesions
- More common in lower limbs than upper limbs





Risk Factors

Smoking is
prime risk factor

Hormonal
influence

Familial factors

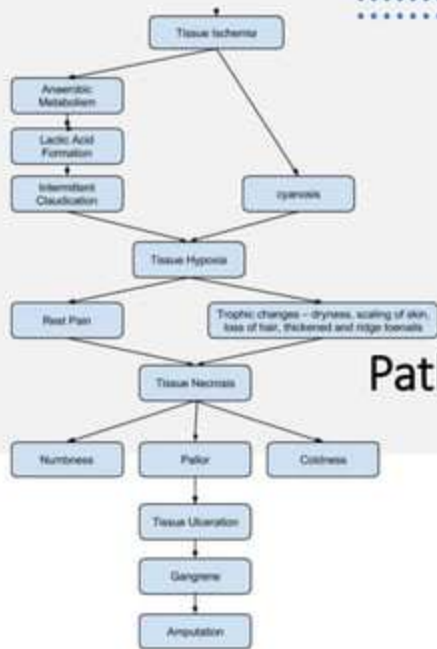
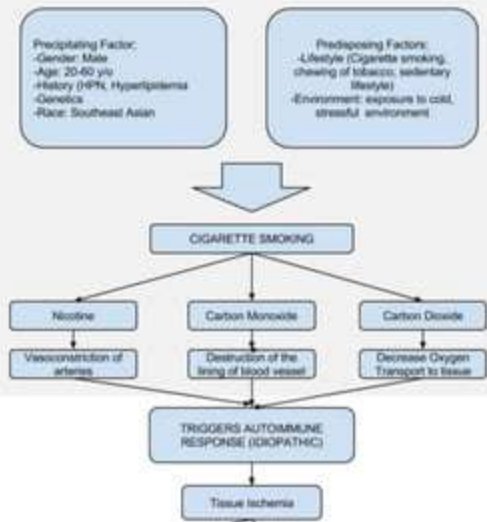
Hypersensitivity
to cigarette

Altered
autonomic
functions

Lower
socioeconomic
group

Recurrent minor
feet injuries

Poor hygiene



Shianoya's criteria for Buerger's disease

Male Tobacco User

Disease onset before 45 yrs

Distal extremity involved first without embolic or atherosclerotic features

Absence of diabetes mellitus or hyperlipidemia

With or without thrombophlebitis

Classification of Buerger's disease

Type 1: Upper limb TAO

Type 2: Involving legs & feet –
crural/infrapopliteal

Type 3: Femoropopliteal

Type 4: Aortoiliofemoral

Type 5: Generalised

Symptoms



weight loss



abdomen pain



pale, red, or blue-tinted hands or feet



cold hands or feet



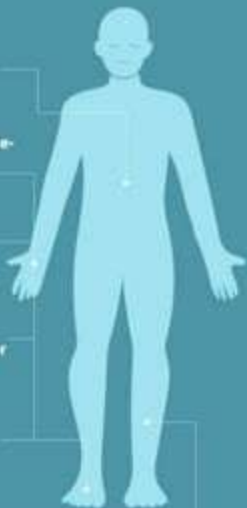
sores or ulcers on the hands or feet



severe pain in hands or feet



pain in lower arms or legs



Clinical Features

Common in male smokers between the 20-40 years of age group. It is a smoker's disease.

Intermittent claudication in foot and calf progressing to rest pain, ulceration, gangrene.

Recurrent migratory superficial thrombophlebitis.

Absence/feeble pulses distal to proximal; dorsalis pedis, posterior tibial, popliteal, femoral arteries.

May present as Raynaud's phenomenon.

**Normal
Circulation**



**Constriction
of a small
blood vessel**

Raynaud's Phenomenon



**White due
to lack of
blood flow**



**Blue due to
lack of oxygen**



**Red when
blood flow
returns**

Investigations

HB%, Blood sugar, ABPI

Arterial Doppler and Duplex scan (Doppler + Bmode US)

CT angiogram is useful especially when intervention is planned

Transfemoral retrograde angiogram through Seldinger technique

- Shows blockage – sites, extent and severity
- Corkscrew appearance of the vessel due to dilatation of vasa vasorum
- Inverted tree/spider leg collaterals
- Severe vasospasm causing corrugated/rippled artery
- Distal run off/is amount of dye filling in the main vessel distal to the obstruction through collaterals.
 - If distal run off is good, then ischemia is compensated.
 - If distal run off is poor, then ischemia is decompensated.



Angiography showing corkscrew appearance of vessels

Investigations

Ultrasound abdomen to see abdominal aorta for block/aneurysm.

Transbrachial angiogram:

- if femoral are not felt, then transbrachial angiogram (through left side brachial artery – left subclavian artery – and so to descending aorta) should be done.

Vein, artery, nerve biopsy.

Treatment



- Stop smoking “opt for either cigarette or limb, but not both.”
- Drugs
 - Low dose of aspirin 75 mg once a day – antithrombin activity
 - Prostacyclins, ticlopidine, praxilene. – antithrombin activity
 - Clopidogrel 75mg, atorvastatin 10mg, parvostatin 40mg, cilostazole 100mg bid – is a phosphodiesterase inhibitor which improved circulation (ideal drug).
 - All drugs act at the collateral level than on the diseased vessel.
 - Analgesic, often sedatives, anti-lipid drugs like atorvastatin may be needed. Complamina retard (xanthine nicotinate) tablet which was used daily once earlier, is presently not in use. However, graded injection of xanthine nicotinate 3000 mg from day 1 to 9000 mg on day 5 is often practiced to promote ulcer healing, helps to increase claudication distance as a temporary basis. Low molecular dextran may be also used.

Treatment

- Naftidofuryl is useful in intermittent claudication; it alters the tissue metabolism.
- Gene Therapy: Intramuscular injection of vascular endothelial growth factor (VEGF) which is an endothelial cell mitogen that promotes angiogenesis.

Note:

- Vasodilators and anticoagulants are of no use in TAO.
- Drugs like pentoxifylline increases the flexibility of ABC's and helps them reach the microcirculation in a better way so as to increase the oxygenation. Its efficacy is more in venous ulcer than arterial diseases (now).

Care of the Limbs

- Buerger's position and exercise-regular graded isometric exercises up to the point of claudication improves the collateral circulation. In Buerger's position, head end of bed is raised; foot end of bed is lowered to improve circulation.
- Buerger's Exercise
 - Patient is in supine position, legs elevated to 45 degree. Time taken for blanching is observed and for 2 more minutes limb is kept elevated. Patient is made to sit in high sitting position with limb in lowered position for 2 minutes. Lastly patient is made in supine position for 5 minutes. This sequence is done 5times/session with 3 sessions a day.



Care of feet (Chiropody):



- Exposure of feet to more cold and warm temperature should be avoided; trauma even minor like nail paring or pressure at pressure points in feet should be avoided. Dryness of feet and legs should be avoided by applying oil to the feet and legs. Footwear should be selected carefully. It is better to wear socks with footwear. Heel raise by raising the heels of shoes by 2 cm decreases the calf muscle work to improve claudication.

Chemical Sympathectomy

- Sympathetic chain is blocked to achieve vasodilatation by injecting local anesthetic agent (xylocaine 1%) paravertebrally beside bodies of L2, 3 and 4 vertebrae in front of lumbar fascia, to achieve temporary benefit. Long time efficacy can be achieved by using 5 ml phenol in water. It is done under C-arm guidance. Feet will become warm immediately after injection. Problems are possible risk of injecting phenol into IVG/aorta, spinal cord ischemia.



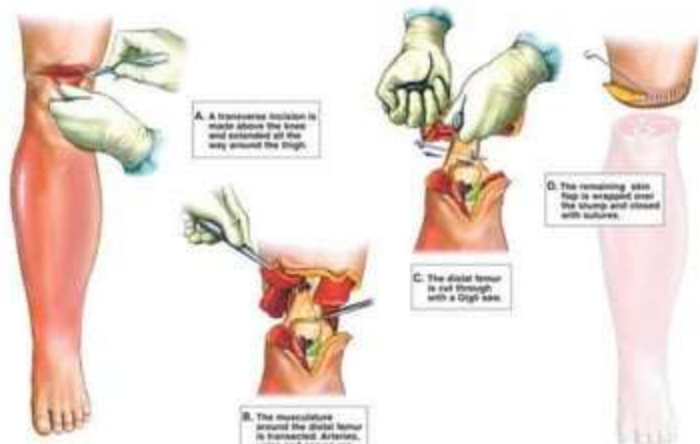
Surgery

Omentoplasty to revascularize the affected limb.

Surgery

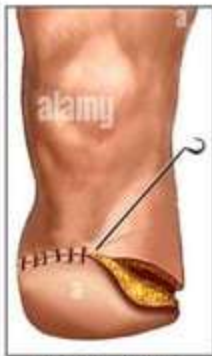
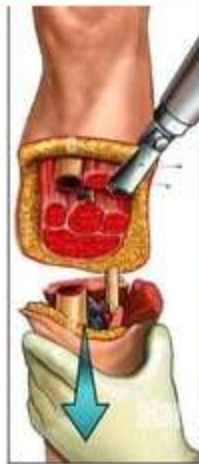
- Profundaplasty is done for blockage in profunda femoris artery to open more collaterals across the knee joint (It often makes better perfusion to the knee joint and flap of below-knee amputation).
- Lumbar sympathectomy to increase the cutaneous perfusion to promote ulcer healing. But it may divert blood from muscles towards skin causing muscle more ischemic.

Surgery



- Amputations are done at different levels depending on site, severity and extent of vessel occlusion. Usually either below knee or above-knee amputations are done.

Amputation



B. The veins, arteries and nerves are divided. The tibia and fibula are transected with an oscillating saw.

C. The remaining skin flap is folded over the stump and closed with sutures.

Surgery

- Ilizarov method of bone lengthening helps in improving the rest pain and claudication by creating neo-osteogenesis and improving the overall blood supply to the limb.





Questions



Thank You

