

thrombosis

Definition:

Thrombosis means pathological formation of blood clot within the lumen

Types of thrombosis:

- . Arterial thrombosis
- . Venous thrombosis
- . Arteriovenous thrombosis
- . Graft thrombosis

Venous thrombosis

Definition:

This means pathologic formation of blood clot in the vein

Types of venous thrombosis :

1- Thrombosis of the the portal venous system

- . Portal vein thrombosis
- . Splenic vein thrombosis
- . Mesenteric vein thrombosis

2- Systemic venous thrombosis

- . Superficial vein thrombosis
- . Deep vein thrombosis

Systemic venous thrombosis

This includes

Superficial veins all over the body

Deep system all over the body

Superficial thrombophlebitis

Definition:

Inflammation and thrombosis of the superficial veins

Types of superficial thrombophlebitis:

- 1- Simple (traumatic)**
- 2- Superficial thrombophlebitis of the varicose veins**
- 3- Septic thrombophlebitis**
- 4- Thrombophlebitis migrans**
- 5- Mondor s disease**

Simple superficial thrombophlebitis

Definition:

**Localized inflammation in the wall of the vein
With thrombus in the lumen**

Etiology:

Damage of the vein or intima of the vein by

- . Direct trauma**
- . Needle or cannula**

Injection of injurious materials

Drug abuse

Clinical picture of simple superficial thrombophlebitis:

The vein becomes:

The overlying skin:

Prevention:

Treatments:

Septic thrombophlebitis

Definition:

It is septic inflammation of the superficial vein

Etiology:

- . Infection of the cannula or venous access site
- . Spread of infection from nearby septic focus

The clinical picture of septic thrombophlebitis :

Systemic manifestations

Local manifestations

Treatment of septic superficial thrombophlebitis:

Superficial thrombophlebitis in

V V

Definition:

Inflammation of the vv and thrombosis of its content

Causes:

- . Direct trauma
- . Wrong use of elastic stocking
- . Associated hypercoagulability
- . Use of contraceptive pills

Complications of vv superficial thrombophlebitis:

Treatments of vv thrombophlebitis:

If the patient presented in the first day

If more than 1 day:

Conservative treatment

Operation after 3-6 months

Thrombophlebitis migrans

Also called

Migrator thrombophlebitis

definition:

It is recurrent attacks of thrombophlebitis involving segments of previously normal superficial veins

It can occurs at any site but most commonly in the lower limbs

Etiology of thrombophlebitis migrans:

- . Idiopathis**
- . Early stage of Buerger s disease**
- . Polyarteritis nodosa**
- . Associated with deep malegnancies**

Clinical picture of thrombophlebitis migrans:

Treatments of thrombophlebitis migrans:

Mondor's disease

Deep venous thrombosis

Definition:

This means pathological formation of blood clot in the deep veins

This includes :

- . Lower limbs DVT
- . Pelvic DVT
- . Inferior vena cava DVT
- . Hepatic veins DVT
- . Superior vena cava thrombosis
- . Innominate vein thrombosis
- . Subclavian vein thrombosis
- . Upper limbs deep venous thrombosis
- . Neck vein thrombosis
- . Head veins thrombosis

Lower limb deep venous thrombosis

This subject includes:

- . Definition :
- . Incidence
- . Etiology of DVT
- . Pathogenesis of DVT
- . Pathophysiology of DVT
- . Clinical picture and presentations
- . D.D of lower limbs DVT
- . Clinical probability of DVT
- . Investigations
- . Complications of DVT
- . Prevention of DVT
- . Treatment of DVT

Definition

It is abnormal blood coagulation in the deep veins of the lower limbs

Incidence

The general incidence:

The exact incidence is unknown

Why??

The site of lower limb DVT:

- . The lower limbs DVT is more common than other sites**
- . Left lower limb DVT is more than the right lower limb DVT**
why ??

Etiology of DVT

This includes:

The predisposing factors

= mechanism of etiology

= (Virchow s triad)

The precipitating factors

= high risk groups

The predisposing factors (Virchow s triad)

Stasis

Damage of the endothelium

Hypercoagulability of the blood

1-Stasis

Slowing of the blood flow due to any cause e.g:

Immobilization

Decrease cardiac function

Previous DVT

Increased viscosity of the blood

Venous compression

2-Damage of the endothelium

Damage of the endothelium whatever the cause e.g:

Venous catheters

Trauma

Infections

Infusions

Surgical manipulations

3-Hypercoagulability of the blood

Primary hypercoagulability

= idiopathic

= congenital hypercoagulability

- . Protein c deficiency
- . Protein s deficiency
- . Antithrombin 111 deficiency
- . Antiphospholipid syndrome

Secondary hypercoagulability

Malignancy

Cancer chemotherapy

Pregnancy

Postpartum period

Trauma

sepsis

Diabetics

Nephrotic syndrome

Smoking

Patients at high risk = risk factors of DVT

General risk factors

Medical risk factors

Drugs and medications

Surgical risk factors

Vascular risk factors

Trauma

Central venous catheter

General risk factors

Medical risk factors

Drugs and medications

Surgical risk factors

Vascular risk factors

Trauma

Central venous catheter

pathogenesis of DVT

Includes:

Steps of thrombus formation

Fate of the thrombus

1-Steps of thrombus formation

Platelets aggregations

Pale thrombus (white thrombus)

Occluded thrombus

Red thrombus

Propagated thrombus

2-Fate of the thrombus

Embolization

Canalization

Resolution

Fibrosis

Chronistry

pathophysiology of DVT

DVT may be

Thrombophlebitis or

Phlebothrombosis

complications of lower limb DVT

This includes:

PE

venous gangrene

recurrent thrombosis

secondary varicose vein

postphlebitic syndrome

Clinical picture of lower limbs DVT

The patients may be

1-asymptomatic

2- presented by

- .pulmonary embolism
- . Low grade fever
- . Local manifestations of venous obstruction
 - early manifestation
 - manifestation of obstruction in general
 - manifestations according to the site of venous obstruction

Early manifestation of DVT:

Manifestations of venous obstruction in general:

Manifestations according to the site

Popliteal and infrapopliteal venous thrombosis

femoral vein thrombosis:

Iliofemoral DVT :

Phlegm Asia alba Dolens



Phlegm Asia cerula Dolens



Deference between them:

[illegible]

D.D of lower limb DVT

From other causes of unilateral lower limb swelling

May be classified into

Common causes and other causes

Acute swollen leg and chronic (+- acute exacerbation)

Diffusely swollen lower limb or localized

According to the etiology

According to dangerousness (most dangerous causes ,other causes)

Causes of unilateral lower limb swelling in according to the etiology

Venous causes

Lower limb acute DVT

Chronic DVT (Post phlebitis syndrome)

Chronic venous insufficiency

Arterial causes

Delayed acute ischemia with irreversible muscle death

Arterial and venous

Congenital arteriovenous fistula

Lymphatics

Lymphedema

Lymphedema with cellulitis

Allergic

Insect bite

Traumatic

Severe trauma in general

Fracture bone

Muscle contusion

Hematoma

Rupture plantares tendon

Compartmental syndrome

Inflammation and infection

Cellulitis

Erysipelas

Calf abscess

Osteomyelitis

Benign tumor

Hemangiomas

Neurofibromatosis

Malignant tumors

sarcoma

Hormonal causes

Pretibial myxedema

Metabolic causes

Lipoderma

Other causes

erythrocytosis frigida

ruptured Backer s cyst

According to dangerousness

Acute lower limb DVT (may cause PE and death)

Compartmental syndrome (may cause gangrene)

Delayed acute ischemia (medicolegal aspect)

Cellulitis



Lymphedema





Lymphedema with cellulitis

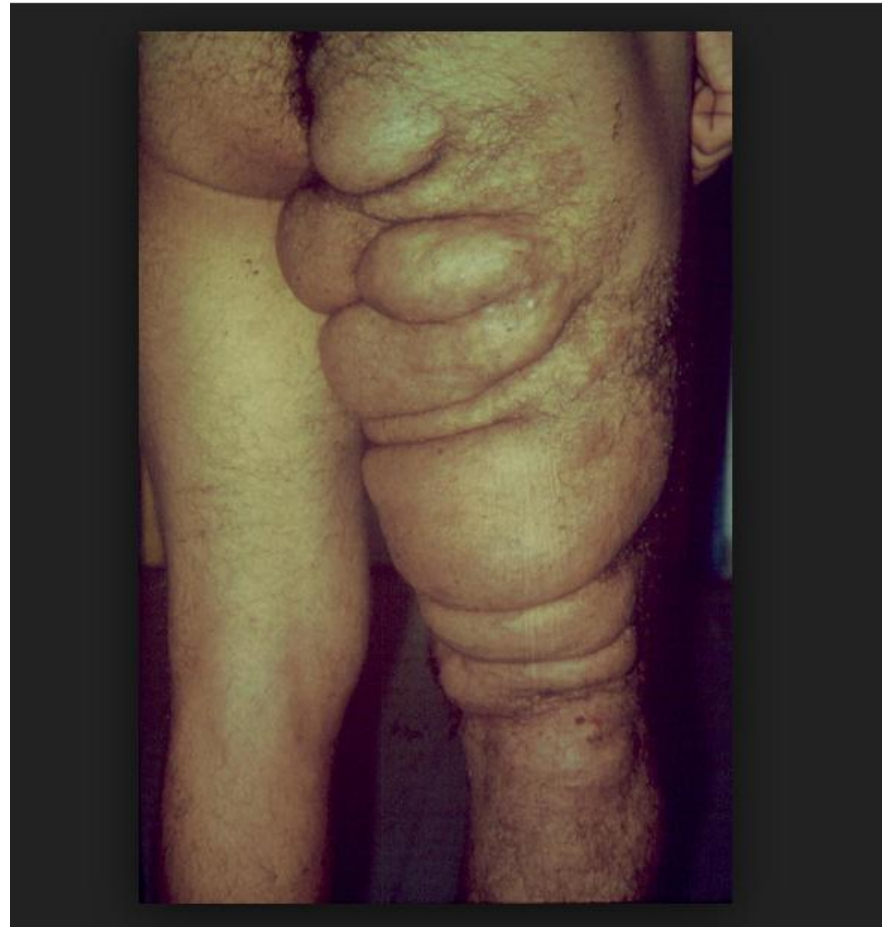


Erysipelas



- **Giant plexiform neurofibroma in a patient with neurofibromatosis**

Mixed capillary venous, low flow malformation



- **Erythrocyanosis frigida**



Lipedema



From other causes of pain in the lower limb:

From other causes of tense or tender calf e.g.:

From other causes with positive Homan's sign

investigations for lower limb DVT

Investigations to diagnose DVT

Investigations to detect complications of lower limb DVT

Investigations to detect the etiology of DVT

Investigations to evaluate the general condition of the patient

Follow up investigations

Investigations to diagnose the presence of DVT

1-non invasive investigations

duplex ultrasonography

plethemography

CT venography

MR venography

D dimer test

duplex ultrasonography

Advantages:



Disadvantages and Limitations of venous duplex

Plethysmography :

PLETHYSMOGRAPHY

- Plethysmography measures change in lower extremity volume in response to certain stimuli.



CT venography:

MR venography:

D dimer test:

2-Invasive investigations:

ascending venography

radioactive fibrinogen uptake

radionucleotide phlebography by t99 macrophage

ascending venography



radioactive fibrinogen uptake



Investigations to detect complications of lower limb DVT

Investigations to detect pulmonary embolism

Investigations to detect chronic venous insufficiency

Investigations to detect the etiology of DVT

Laboratory investigations

radiological

Tumor survey

Investigations to evaluate the general condition of the patient

Follow up investigations

To evaluate the progress

to evaluate the dose of treatment

clinical probability

Variable	Wells
Active cancer (rx within last 6 months or palliative)	1
Calf swelling >3 cm compared to other calf	1
Collateral superficial veins (non-varicose)	1
Pitting edema	1
Swelling of entire leg	1
Localized pain along distribution of deep venous system	1
Paralysis, paresis, or recent cast immobilization of lower extremities	1
Recently bedridden > 3 days, or major surgery requiring regional or general anesthetic in past 12 weeks	1
Previously documented DVT	1
Alternative diagnosis at least as likely deep vein thrombosis	-2

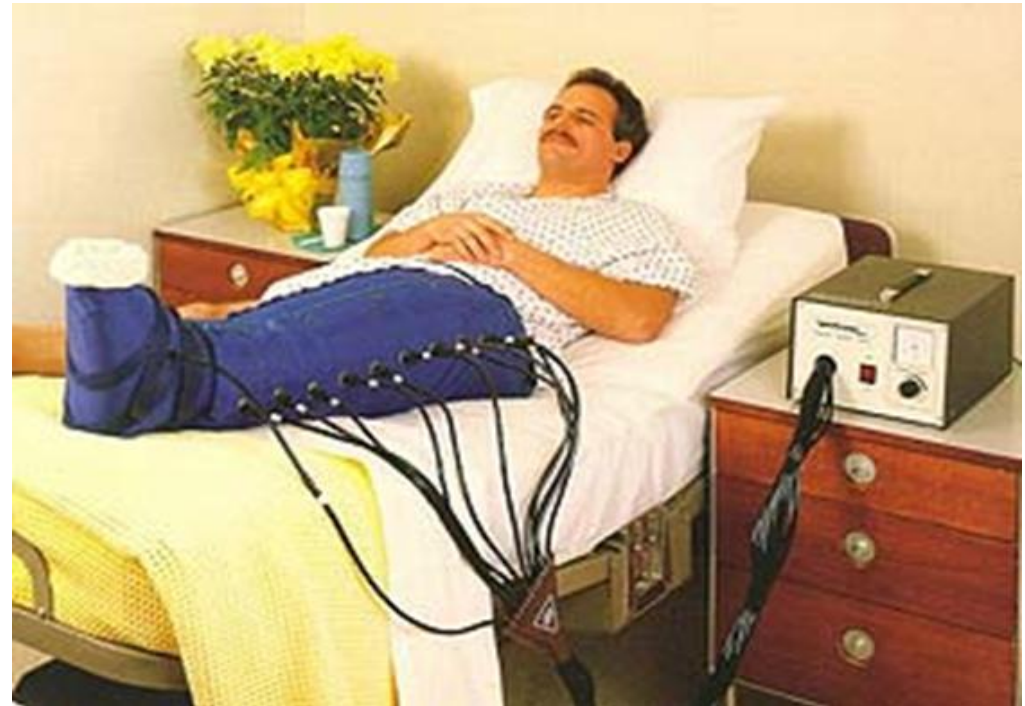
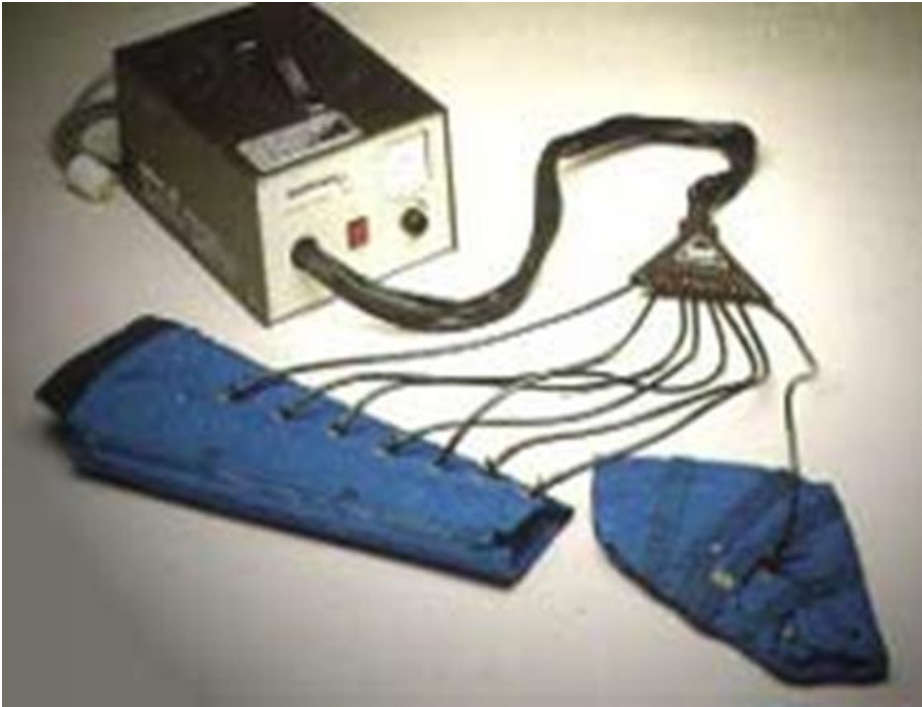
treatments of acute lower limb DVT

This includes:

prevention of DVT

This includes:

Pneumatic Compression Pumps



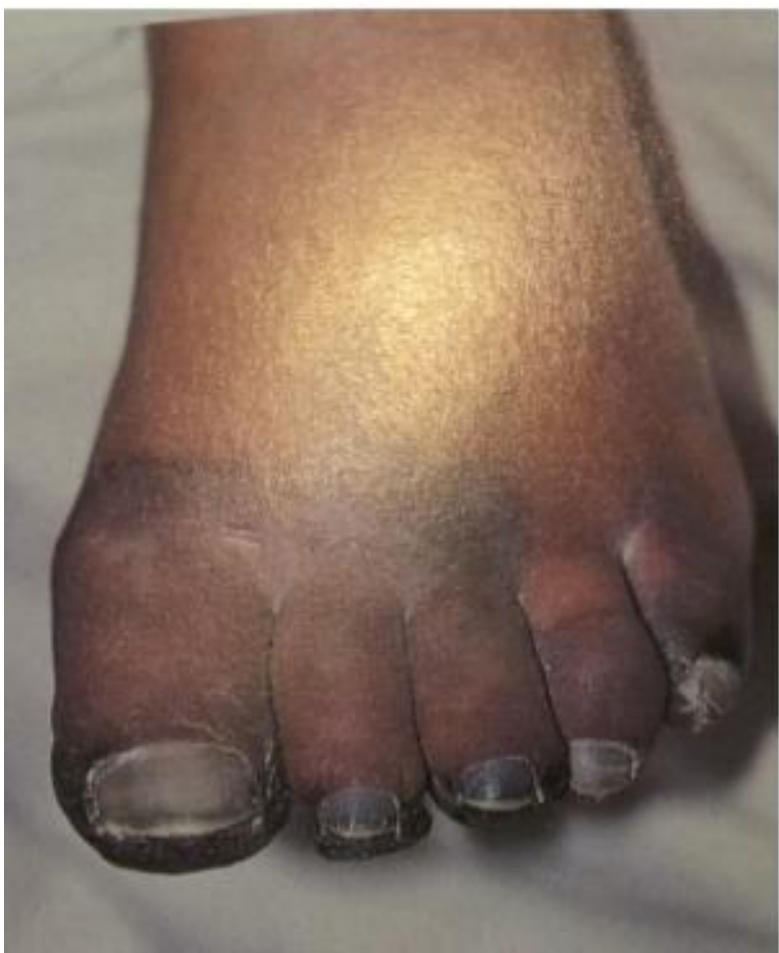
complications of DVT

This includes:

Pulmonary Embolism

venous gangrene





post phlebitis leg

Chronic Venous Insufficiency





Chronic venous ulcer





