DVT prophylaxis

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المرحلة الثالثة

Introduction

Deep Venous Thrombosis

Pathological features leading to DVT includes (Virchow's triad)

1. Changes in the constituents of blood.
2. Changes in blood flow.
3. Changes in the vessel wall.


Deep Vein Thrombosis
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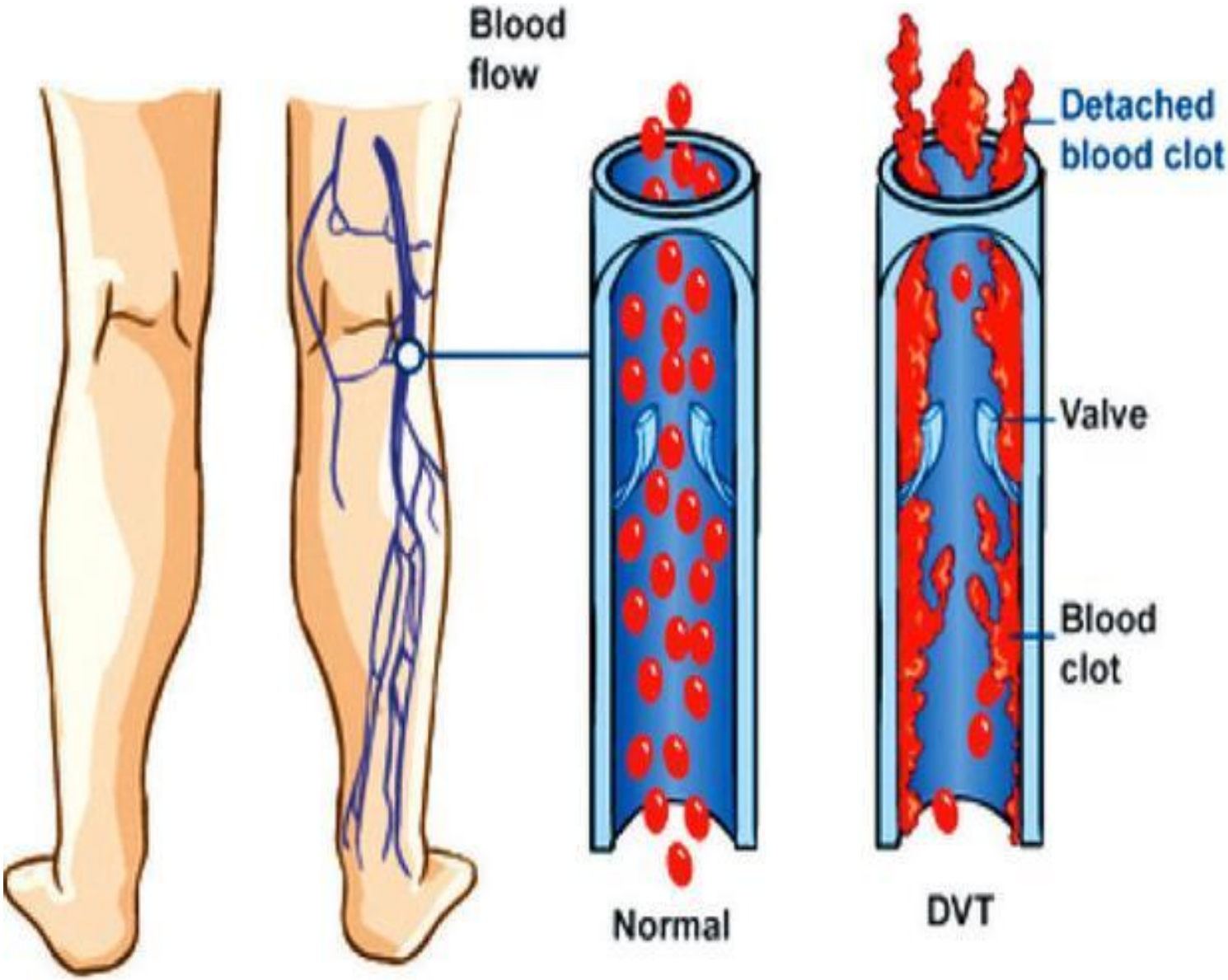
Blood flow
Detached blood clot
Valve
Blood clot
Normal
DVT

Predisposing factors:

Trauma, malignant diseases, surgery, previous DVT, prolonged bed rest , cardiac failure, estrogen containing contraceptive pills, pregnancy, pelvic masses, obesity, dehydration , and certain blood disorders as polycythemia

Symptoms and signs:

Swelling of the leg

Tenderness of the calf muscles

Increase temp. of the leg

Calf pain on passive dorsiflexion of the foot(Homman's sign)

Phlegmasia alba dolens: occlusion of the iliofemoral segment with gross swelling of the whole limb which is painful and white.

Phlegmasia caerulea dolens : complete blockage of the iliofemoral segment causes extreme pain with bluish discoloration and impending venous gangrene.

Diagnosis:

Continuous wave ultrasound
Duplex scanning
Venography
Radio isotope scanning (Iodine 125 fibrinogen uptake tests)

Prevention :

Adequate hydration, avoiding calf pressure, early postoperative mobilization.

Patients at special risk should be treated as follows;

* Low dose sc heparin (5000 units) b.d. preoperatively and postoperatively until the patient is mobilizing satisfactorily.
* calf compression devices used intraoperatively
*graded compressive stockings

DVT prophylaxis

Many postoperative patients are not immediately ambulatory. In these individuals, it is important to provide prophylactic therapy to reduce the risk of DVT and PE.

Prophylaxis should be started preoperatively in patients undergoing major procedures because of venous stasis and relative hypercoagulability occur during the operation.

Prophylaxis for deep venous thrombosis and pulmonary embolus

Patient group[a]	Surgery type	Prophylaxis
Low risk	Minor	None
Low or moderate risk	Major	GCS, SQH-12, or IPC
High risk	Major	SQH-8 or LMWH[b]
Highest risk	Major	SQH-8/12 or LMWH + IPC

[a] [illegible]

A Low risk, age less than 40 years, no risk factors;
moderate risk, major surgery & age less than 40 years or minor procedure with risk factors or between 40 and 60 years of age;
high risk, major procedure over age 40 or with risk factors, or minor procedure over age 60 or with risk factors;
highest risk, age greater than 40 years, multiple risk factors present, major procedure.
(GCS, graded compression stockings; IPC, intermittent pneumatic compression; LMWH, low molecular-weight heparin; SQH-8, subcutaneous heparin every 8 hours; SQH-12, subcutaneous heparin every 12 hours.)

Mechanical prophylaxis includes graded compression stockings and intermittent pneumatic compression devices, either of which are nearly as effective as unfractionated heparin in reducing DVT in most low-risk to moderate-risk patients who are undergoing general surgical procedures.

These devices alone are inadequate prophylaxis for high-risk (especially cancer) patients and should be avoided in individuals with peripheral vascular disease.

Unfractionated heparin, 5,000 units subcutaneously, starting 2 hours before surgery and continuing every 8 to 12 hours postoperatively, markedly decreases the incidence of DVT after general surgery.

No increase in major hemorrhagic complications is observed with this regimen, although the rate of wound hematoma is higher.

Low molecular-weight heparins, such as enoxaparin (1 mg/kg subcutaneously every 12 to 24 hours), are derivatives of unfractionated heparin and have become an important class of agents in the prevention and treatment of thromboembolic disease. These agents have a clinical efficacy that is nearly equivalent to that of intravenous heparin and they do not require frequent measurement of coagulation times. Prophylactic efficacy has been demonstrated in patients who have undergone total hip replacement and in those who are undergoing elective abdominal or pelvic operation for malignancy, as well as after major trauma.

Warfarin is indicated in some lower extremity orthopaedic procedures and in certain high-risk patients (i.e., antithrombin III deficiency). Dosing is usually targeted to an INR of 2.0 to 3.0.

This method of prophylaxis carries a significantly higher rate of major postoperative bleeding (5% to 10%) than low-dose heparin and is usually not indicated in general surgery patients.