بسم الله الرحمن الرحيم
Thromboembolic disease in pregnancy

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Introduction

• Venous TED is one of the major causes of direct maternal deaths. Those who survive suffer significant morbidity

• Pregnancy is associated with 5-6 fold increased risk of TED than outside pregnancy. The true incidence is unknown but rated between 0.3 – 1.2% of all pregnancies

• In 80% of cases it occurs post-nataley usually during the first 2 weeks
• Iliofemoral area affected (70%) >> calf area

• Predilection for left leg (90%)

• Usual symptoms may be confusing due to similarity with symptoms of pregnancy
Why pregnancy is associated with increased tendency for clotting?

Virchow’s triad

- Venous stasis
- Increased production of clotting factors
- Increased tendency for platelet aggregation
Low risk

Elective caesarean section
Uncomplicated pregnancy
No other risk factor
medium risk

- Age above 35 years
- Weight above 80 kg
- Para 4 or more
- Gross varicose vein
- Current infection
- Pre eclampsia
- Immobility
- Major current illness
- Emergency caesarean section in labor
High risk

- 3 or more moderate risk factor
- Extended surgery e.g. caesarean section, hystrectomy
- Family or Personal history of DVT, PE, thrombophilia
- Antiphospholipid antibody
• For Low risk;
Thromboprophylaxis
Early mobilization and hydration

For medium risk;
Subcutaneous Heparin or stoking

• For high risk;
Heparin and leg stoking
Types of venous thrombosis

• **Superficial** thrombo phlebitis

• **Calf** (below knee)deep vein thrombosis

• **Proximal or** (ilio-femoral) deep venous thrombosis
Superficial thrombophlebitis

• The condition is misnamed. It is not infective. the redness surrounding the affected vein is a reaction to clot

• It is the commonest form of venous thrombosis in pregnancy & puerperium. It occurs in about 1% of patients and nearly always arise in existing varicose veins
• The diagnosis is clinically obvious (tenderness, erythema, palpable cord-like veins)

• Treatment is usually symptomatic with compression bandage, leg elevation and to encourage mobility

• In some pt’s DVT need to be excluded as it may co-exist with it. evenmore extension to involve deep veins rarely occurs
Calf deep venous thrombosis (CVT)

The most common clinical features are

- pain
- local tenderness
- swelling
- change in skin colour and temperature
• Most of CVT resolve spontaneously (75-80%) and run a benign course except when the thrombus spreads up to involve the proximal deep veins (20-25%) in which case there is 50% risk of pulmonary embolism.
Proximal DVT

• It more commonly than CVT, 80% is left-sided.

• Symptoms are more dramatic with pain and swelling involving the entire limb.

• If the arterial supply is unimpaired, the leg appears swollen, blue & warm.

if arterial spasm occurs secondary to irritation from the nearby clotted vein, the leg becomes swollen, painful, white & cold.
DIFFERENTIAL DIAGNOSIS

- **Cellulitis**
  - Thrombophlebitis

- **Arthritis**
  - Asymmetric peripheral edema secondary to CHF, liver disease, renal failure, or nephrotic syndrome
  - Lymphangitis
  - Extrinsic compression of iliac vein secondary to tumor, hematoma, or abscess

- **Hematoma**

- **Lymphedema**
Muscle or soft tissue injury
Neurogenic pain
Postphlebitic syndrome
Prolonged immobilization or limb paralysis
Ruptured Baker cyst
Stress fractures or other bony lesions
Superficial thrombophlebitis
Varicose veins
Pulmonary embolism (PE)

- A high index of suspicion is always needed for the diagnosis of PE especially in patients with DVT or risk factors for VTE
- The maternal mortality rate from untreated PE is 13% with the majority within 1 hr of the event
- With early diagnosis & treatment, the survival rate is between 92-95%
The common symptoms & signs of PTE

- Tachypnoea
- dyspnoea
- Haemoptysis
- Pleuritic chest pain
- tachycardia
- Cyanosis
- Pyrexia
- Syncope or varying degree of shock

These S &S are non-specific and in most cases there is no prior clinical evidence of DVT
Inferior vena cava
Heart
Blood clot
Area of infarct (tissue damage)
Emboli travel up through inferior vena cava to heart and lungs.
diagnosis

DVT:

- Compression Duplex ultrasonography
- Ascending venography
PE:

- Chest X-ray
- ECG
- Blood gases
- Perfusion & ventilation lung scanning
- Pulmonary angiography
- CT scan (CTPA), CTPA is first-line investigation for non-massive PTE, better sensitivity and specificity
D-Dimer testing

• A marker of coagulation or blood clotting
• Rapid, inexpensive, false negative 4-17%
• Useful to exclude DVT if the result are normal.
• During pregnancy, high level due to physiological changes
• Normal value exclude VTE
• Should not be used to diagnose Acute VTE in pregnancy
Prophylaxis of TED during pregnancy

• If there is no history of TE but the patient delivered by c/s and has other risk factor such as old age or obesity consider prophylaxis by LMWH 20-40 mg /once daily for about 1 wk
• If there is history of **one episode of DVT** and **no other risk factor** no need for prophylaxis during pregnancy and to give prophylaxis after delivery by LMWH 20-40mg/once daily for 6wk post partum
• If there is history of once episode of DVT and no other risk factor during pregnancy such as admission to hospital for long time PET or PROM give prophylaxis from time of admission till delivery and then after delivery for 6wk
- If there is history of one episode of PE or 2 DVT or history of TED or anti-cardiolipin antibodies or presence of lupus inhibitor or cardiac d prophylaxis throughout pregnancy and after delivery for 6wk
In cardiac case:

- Warfarin in 1\textsuperscript{st} trimster and up to 36 wk and LMWH iv 6000iu/6hr and up to 12hr before delivery

- Sc Heparin is not effective so Warfarin give in 1\textsuperscript{st} trimster inspite for teratogenic effect
At time of delivery

- D/C **LMWH** (or UFH sc) 24 hrs. prior to elective induction

- If very high risk of recurrence (eg, PE or DVT within 2-4 weeks of expected delivery), **IV UFH** can be initiated and d/c 4-6 hours prior to delivery; in addition, a temporary **IVC filter** can be inserted
• If spontaneous labour occurs while receiving **adjusted-dose SC UFH**, monitor PTT and if prolonged give protamine

  – If spontaneous labor occurs while receiving **LMWH**, anticoagulant effect depends on timing of last dose.

  • **Avoid epidural**

  • Protamine can be considered
Treatment of VTE
Heparins

- **Unfractionated Heparin**, molecular weight 12000-15000 daltons, inhibit thrombin, cause prolongation of activated partial thromboplastin time (aPTT)

- **Fractionated LMWHs**, molecular weight of 4000-6000 daltons, inhibit factor Xa activity, they have minimal effect on thrombin, they don’t prolong aPTT.
Enoxaparin 1 mg/kg 12-hourly;

Dalteparin 100 units/kg twice daily up to a maximum of 20 000 units/24 hours.

Tinzaparin 175 units/kg) throughout pregnancy
• Heparins are safe with respect to teratogenicity – do not cross placenta

• LMWH dose may need adjusting with weight changes ... follow anti-Xa levels
• **Duration of treatment**: at least a total of 3-6 months and must include 6 wk post-partum period

• **Discontinuation during labour due to risk of uteroplacental bleeding.**
Side effects:

- Mainly maternal
- Osteoporosis
- thrombocytopenia starts 7-14 days after therapy

- LMWH produce less side effects and less bleeding overall.
Warfarin

- Oral anticoagulant
- Molecular weight 1000 daltons
- Prevents formation of vitamin K dependents coagulation factors.
- Requires 1-3 days to reach maximum effect.
- Antidote vitamin K or FFP
• Contraindicated in pregnancy

– 1st trimester: nasal hypoplasia, stippling of bone, optic atrophy, mental retardation, cleft lip, cleft palate, cataracts, microophthalmia, ventral midline dysplasia

– beyond 1st trimester: CNS abnormalities
– peri-partum: bleeds (mom and baby)
– Warn about getting pregnant again while on Warfarin (most risk starts at 6 wks gestation)

• Acceptable with breastfeeding
Management of PE

If a pulmonary embolism is suspected:

• Give oxygen
• Heparinize immediately (full anti-coagulant dosage I.V 36000 iu/24h with a bolus dose)
• Call for senior help (anaesthetic/medical/cardiothoracic)
• Definitive diagnosis: V/Q scan or pulmonary angiography
• Further management: life threatening PE may warrant thrombolytic drugs or surgery
Antiphospholipid Antibodies

• Lupus anticoagulant/non-specific inhibitor
• Anticardiolipin antibodies
Management of pregnant women with APLAs

- **Positive APLAs and hx of 2 or more early pregnancy losses or one or more late pregnancy losses, IUGR, preeclampsia, or abruption**
  - Antepartum ASA plus prophylactic LMWH
  - Antepartum ASA plus minidose or moderate dose UFH
• **Positive APLAs** and hx of **VTE** are usually receiving long-term anticoagulation bc of high risk of recurrence
  
  – Antepartum adjusted dose LMWH (or UFH) plus ASA
  
  – Long-term oral anticoagulation postpartum
Thank you