Bleeding disorders in pregnancy

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Introduction

- Women face several blood-related health issues
- Pregnancy increases the risk of some blood problems
- blood disorders may become more problematic during pregnancy
- Thromboembolic diseases leading mortality case in pregnancy and post partum

The process of hemostasis is complex and is further complicated in the parturient because of the physiological changes of pregnancy

Pathophysiology

- **Pregnancy is hypercoagulable state**
- **Coagulation factors 1,II,V,VII,VIII,X,XII increases**
- **Resistance to protein C increase**
- **Protein S and co factor to protein C decreases.**
- **Placenta secretes plasma fibrinolytic inhibitors**
- **Plasminogen activator inhibitor type 1 increase 5 fold ---reduces fibrinolytic activity.**
- **Compress IVC and iliac vein ---uterus ---- lead to stasis- Endothelial injury at the time of delivery**

Bleeding disorder

- Von willebrand disease
- Hemophilia A, B ,C
- Thrombocytopenia

Hemophilia and Vwd in pregnancy

- vWD: deficiency in von will brand factor and factor VIII leads to a defect in primary hemostasis (gene is on chromosome 12)
- Type1:mild vwf deficiency
- Type 2: qualitative defect type 2b thrombocytopenia
- Type 3: non functional severe vWf deficiency
- Type 1and 2 are autosomal dominant and type 3 VWD is autosomal recessive

Bleeding disorders

- **Effect of hemophilia and vwd on pregnancy**
- **Maternal effect :**
- **Increase risk of excessive bleeding with early pregnancy miscarriage ,ectopic or CVS.**
- **Risk of PPH 20% mainly secondary**
- **Fetal effect:**
- **Spontaneous bleeding is rare**
- **Traumatic delivery may cause intracranial hemorrhage &cephalhematoma**

Management

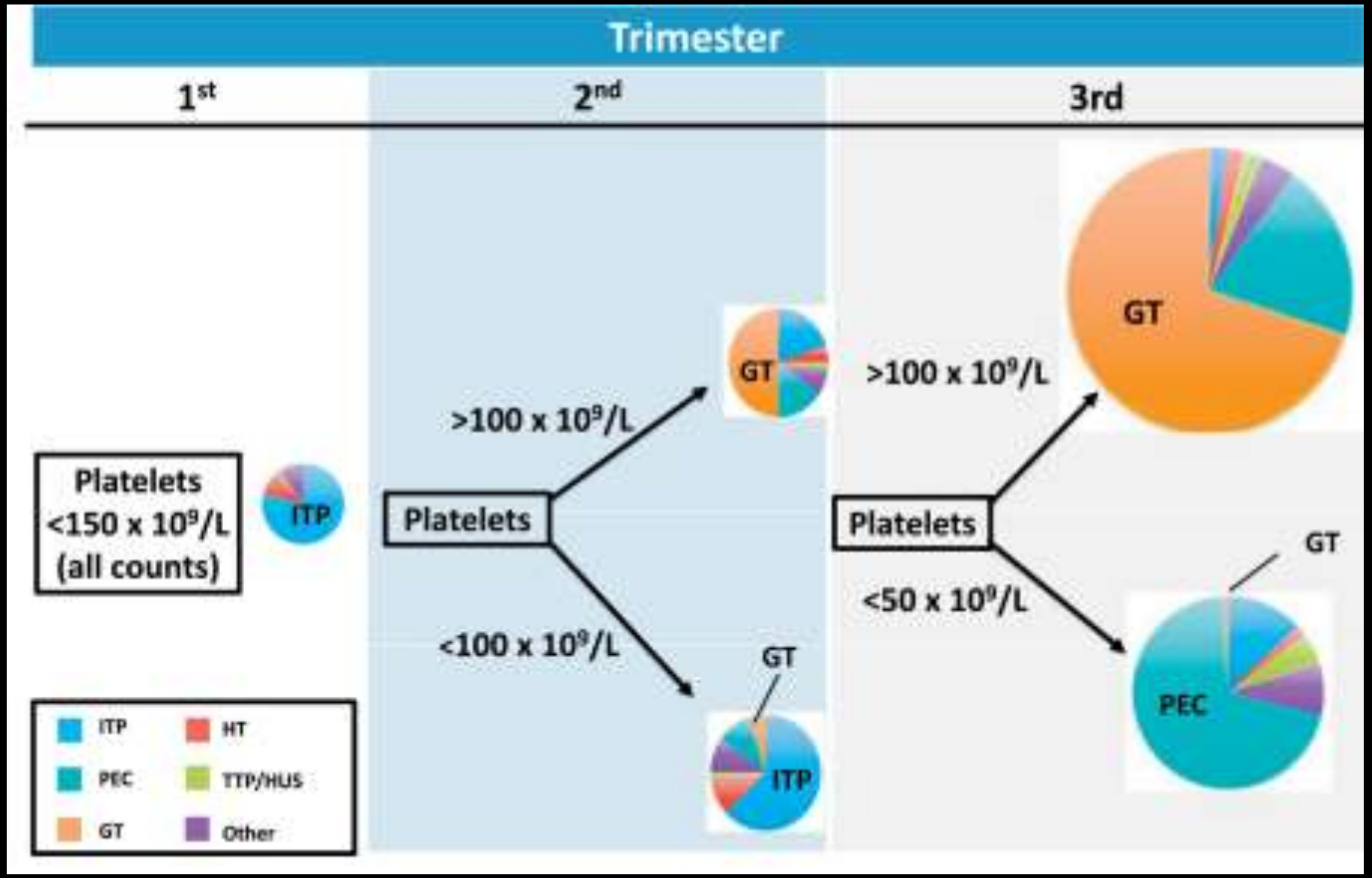
- ***Mild to moderate vWD or carriers hemophilia A don't require treatment FVIII, Vwf rise***
- **Avoid vacuum delivery**
- **Avoid fetal scalp sampling**

Thrombocytopenia

- Platelet count <150.000 normally 10 % pregnancy
- Below 50.000 surgical site bleeding
- Spontaneous bleeding <20,000
- Significant bleeding <10,000

Conditions;

- Gestational thrombocytopenia
- HELLP syndrome
- Idiopathic thrombocytopenic purpura


Trimester
1st
2nd
3rd
Platelets
<150 x 10⁹/L
(all counts)
ITP
Platelets
>100 x 10⁹/L
GT
<100 x 10⁹/L
GT
ITP
Platelets
>100 x 10⁹/L
GT
<50 x 10⁹/L
GT
PEC
ITP
HT
PEC
TTP/HUS
GT
Other

Thrombocytopenia

- **Gestational thrombocytopenia**
- **Most common diagnosis 75% of cases**
- **(accelerated platelet activation at placental circulation + accelerated consumption of platelets –reduced lifespan during pregnancy)**
- **Essential thrombocytopenia**
- **Hemodilution**
- **Return to normal up to 12 weeks post partum**
- **Diagnosis is exclusion 5 criteria**
- **1.mild thrombocytopenia 70-150,000**
- **2.no previous history except in pregnancy**
- **3.No bleeding symptoms**
- **4.Occurrence during late gestation**
- **5.No association with fetal thrombocytopenia**

Thrombocytopenia

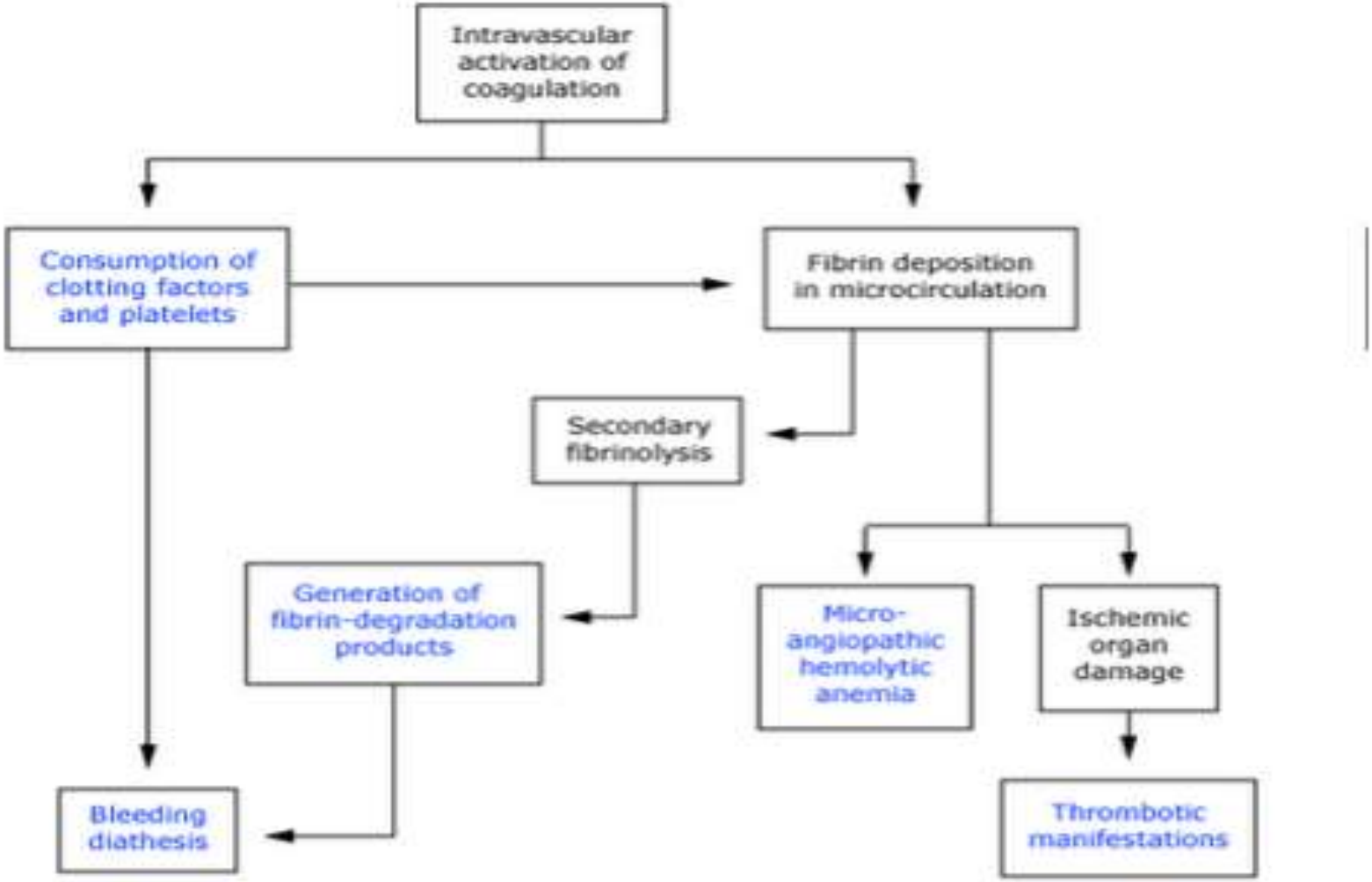
- **HEELP Syndrome :**
- **THE most common pathological cause**
- **It occur 10-20% with severe PET**
- **Idiopathic thrombocytopenia purpura**
- **5% of pregnancy with thrombocytopenia**
- **Most common type in 1st trimester**
- **Antiplatelet antibodies**
- **Can cause neonatal thrombocytopenia LgG**

disseminated intravascular coagulation (DIC)

Is a systemic process producing both thrombosis and hemorrhage

- **It is initiated by a number of defined disorders and consists of the following components:**
  1. **Exposure of blood to procoagulants**
  2. **Formation of fibrin in the circulation**
  3. **Fibrinolysis**
  4. **Depletion of clotting factors**
  5. **End-organ damage**

Pathophysiology of the clinical manifestations of disseminated intravascular coagulation



Management

- Treatment of the underlying disease
- Hemodynamic support is essential
- Supportive modalities — Recommendations concerning management of the coagulopathy associated with DIC are limited by the absence of controlled trials
- We suggest the use of one or more of the following supportive modalities for the symptomatic patient:

1. Treatment with platelets and coagulation factors with risk of haveing serious bleeding, are at high risk for bleeding (eg, after surgery), or require invasive procedures. Patients with marked or moderate thrombocytopenia (<50,000/microL) and serious bleeding should be given platelet transfusions (1 to 2 units per 10 kg per day)
2. Actively bleeding patients with a significantly elevated prothrombin time (INR) and/or a fibrinogen concentration <50 mg/dL, should receive fresh frozen plasma or cryoprecipitate in order to keep the fibrinogen level >100 mg/dL.
3. The administration of heparin is generally limited to the subset of patients with chronic, compensated DIC who have predominantly thrombotic manifestations. It is important to be sure that the patient's antithrombin (AT) level is near normal (ie, 80 to 100 percent) in order for heparin to be effective

Summary

- Maternal thrombocytopenia between 100 /L and 149 *10^9 in asymptomatic pregnant women with no history of bleeding problems is usually due to gestational thrombocytopenia
- Given the very low risk of serious neonatal hemorrhage, the mode of delivery in pregnancies complicated with immune thrombocytopenia should be determined based on obstetric considerations alone

Summary

- Platelet transfusion to increase the maternal platelet count to more than 50 *10^9/L before major surgery
- Epidural or spinal anesthesia is considered acceptable, and the risk of epidural hematoma is exceptionally low in patients with platelet counts of 70 *10^9/L

- Fetal–neonatal alloimmune thrombocytopenia should be suspected in cases of otherwise unexplained fetal or neonatal thrombocytopenia, hemorrhage, or ultrasonograpic findings consistent with intracranial bleeding

Thromboembolic disease

- **Venous thromboembolism : VTE**
- **1. Deep vein thrombosis**
- **2.pulmonary embolism**
- **Most common cause maternal deaths in developed countries**
- **Pregnant women 4-5 times more likely to have VTE with same age non pregnant**
- **80% of VTE in pregnancy are DVT**
- **20% are PE**
- **C-section 3-5 time greater risk than vaginal delivery**

hypercoagulable why?

- **Pregnancy is hypercoagulable state :::**
- **Coagulation factors 1,V,VII,IX,X,XII increases**
- **Plasminogen activator inhibitor -1 increased**
- **Coagulation factors XI,XIII decreases**
- **Placenta secretes plasma fibrinolytic inhibitors**
- **Protein S decrease**
- **Compress IVC and iliac vein ---uterus ---- lead to stasis(vein stasis)**

Risk factors

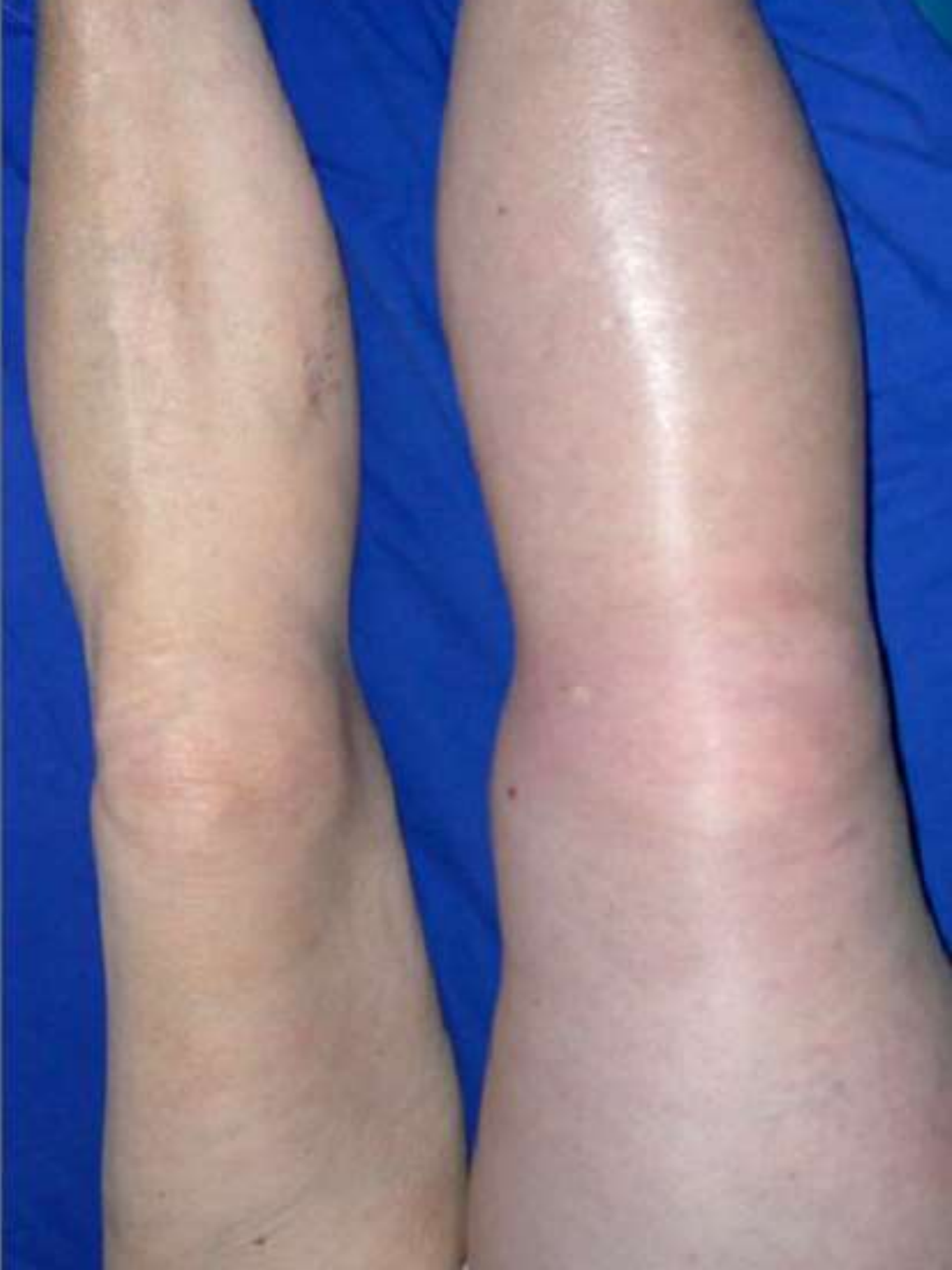
- **The most significant is a personal history of VTE**
- **Other risk factors :**
- **1. maternal heart disease**
- **2.Sickle cell disease**
- **3.systmic lupus**
- **4.obesity**
- **5.Diabetes mellitus**
- **6.hypertention**
- **7.recunt surgery**
- **8. family history**
- **9.PET**
- **10 .smoking**
- **11. age >35 years**
- **12.multiple gestation**
- **13.postpartum infection**
- **14. bed rest --immobilization**

thrombophilia

- ***Inherited or acquired :***
- ***When you suspect thrombophilia??***
- **1. history of recurrent pregnancy loss more than 3 mischarges**
- **2.2nd trimester missed mischarge with out congenital anomalies**
- **3. Preterm delivery due to severe PET**
- **4.FD**
- **5.severe IUGR**
- **6.abruption placenta**

DVT

- 70 % -80% occur in the ilio-femoral vein
- Majority of cases left side
- Symptoms :abdominal pain ,back pain , leg swelling
- Leg tenderness ,warmth , erythema
- <u>Diagnostic tool :</u>
- Venous duplex imaging sensitive 97% specificity 94%
- MRI : sensitive 100% specificity 99%
- D-dimer test: non specific



Pulmonary embolism

- The grater risk is post partum
- After C-section risk increasing
- Most commonly from DVT in the lower extremities
- All symptoms are common in normal pregnancy
- Chest pain shortness of breath
- Cough tachypnea
- Tachycardia

- ** Low threshold for evaluation ***

Pulmonary embolism

- **Diagnosis:**
- **1.cerful history**
- **2.ABG s (respiratory alkalosis , hypoxia)**
- **3.ECG (sinus tachycardia , right bundle branch block, S1,Q3,T3) deep s in I ,Q and inverted T III.**
- **4.Possible chest x ray**
- **5.Ventilation-prefusion scan primary diagnostic test**
- **6.Gold standard pulmonary angiography**
- **7. CT – angiography**
- **<u>*High radiation</u>**
- ***breast milk should not be used for 2 days after V/Q**

Treatment

- **When suspect start treatment**
- **Until the diagnosis is excluded**
- **** heparin (low molecular weight heparin LMWH**
- **Or unfractionated heparin UNF)**
- **Don’t cross placenta**
- **Don’t secreted into milk**
- **No teratogenicity**
- **No fetal hemorrhage**

Treatment

- **Weight adjusted**
- **Monitoring by Anti-factor Xa activity for LMWH**
- **PTT for UFH**
- **Duration of treatment: for 6 month from initiation or 6 weeks post partum whichever is longer**
- **Warfarin sodium:**
- **Crosses placenta**
- **Not enter breast milk**
- **Teratogen**
- **Fetal bleeding**
- **Skeletal embryopathy**
- **Central nervous system injury**

Thank you