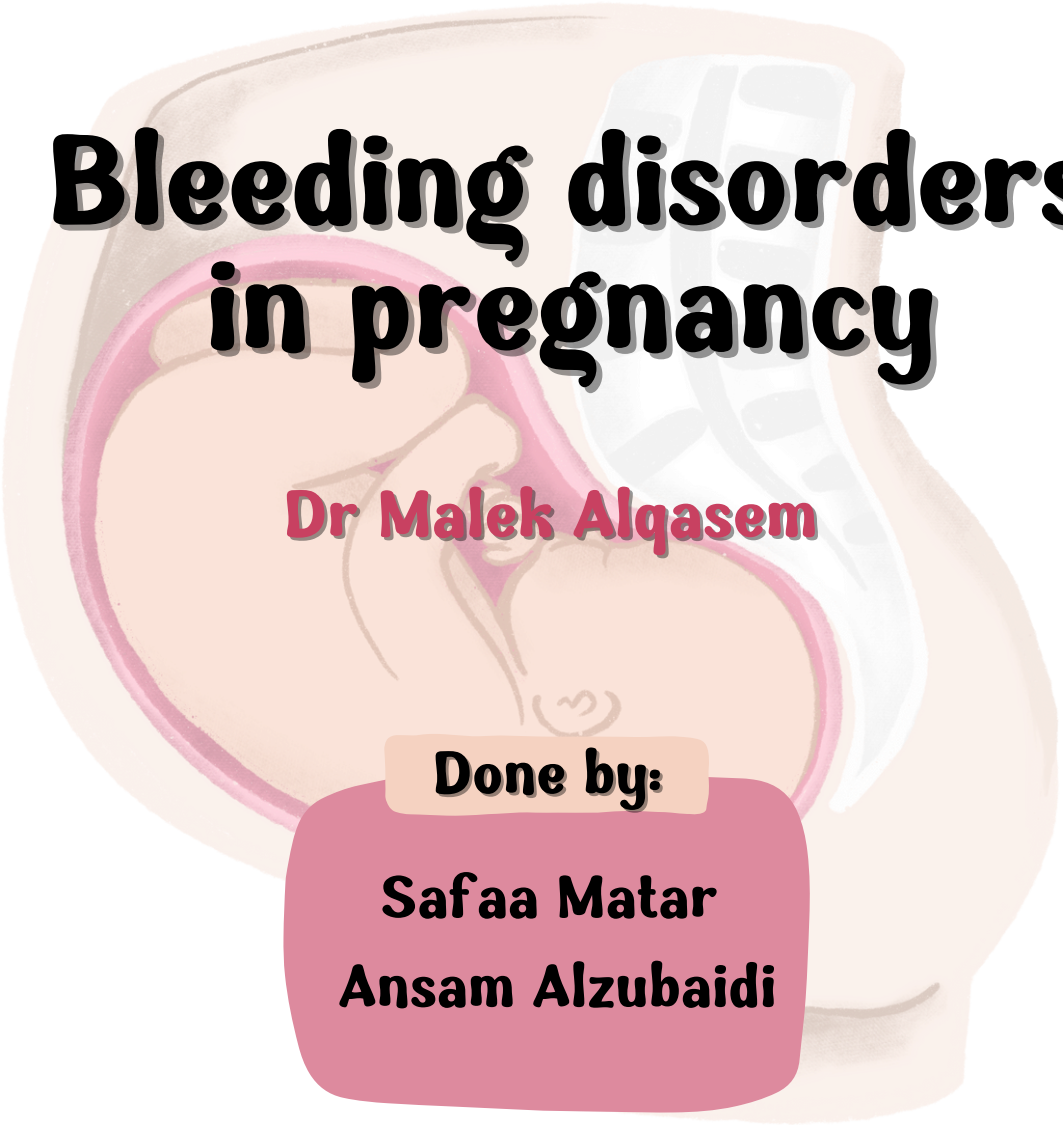
Obstetrics & Gynecology

Doctor 2019 - نبض - Medicine - MU

Bleeding disorders in pregnancy



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This sheet contains:

- lecture slides
- Doctors notes
- additional notes and pictures from OBS & GYN books

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

Pathophysiology

-Pregnancy is a hypercoagulable state
-Coagulation factors 1, II, V, VII, VIII, X, XII increase
-Resistance to protein C increase
-Protein S and cofactor to protein C decrease
-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 Willebrand factor and factor VIII leads to a defect in primary hemostasis (gene is on chromosome 12)
Type1: mild VWF deficiency
Type2: qualitative defect type 2b thrombocytopenia
Type3: non-functional severe vWf deficiency
-Type 1 and 2 are autosomal dominant and type 3 VWD is autosomal recessive

Effect of hemophilia and VWD on pregnancy

-Maternal effect :

Increase the 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

2 causes of thrombocytopenia beside the pregnancy:

- Dilutional effect
- Decrease the platelet life-span in pregnancy (4 days)

Gestational thrombocytopenia

The 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 postpartum

Diagnosis is exclusion 5 criteria

-mild thrombocytopenia 70-150,000

-no previous history except in pregnancy

-No bleeding symptoms

-Occurrence during late gestation

-No association with fetal thrombocytopenia

- First-trimester platelet < 150.000: ITP
- Second-trimester platelet < 150.000: ITP or gestational
- Third-trimester platelet < 150.000: if normal values before >> gestational thrombocytopenia after exclusion of other pathologies

HEELP Syndrome :

The most common pathological cause

It occurs 10-20% with severe PET

Idiopathic thrombocytopenia purpura :

of pregnancy with thrombocytopenia 5%

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:

-Exposure of blood to procoagulants

-Formation of fibrin in the circulation

-Fibrinolysis

-Depletion of clotting factors

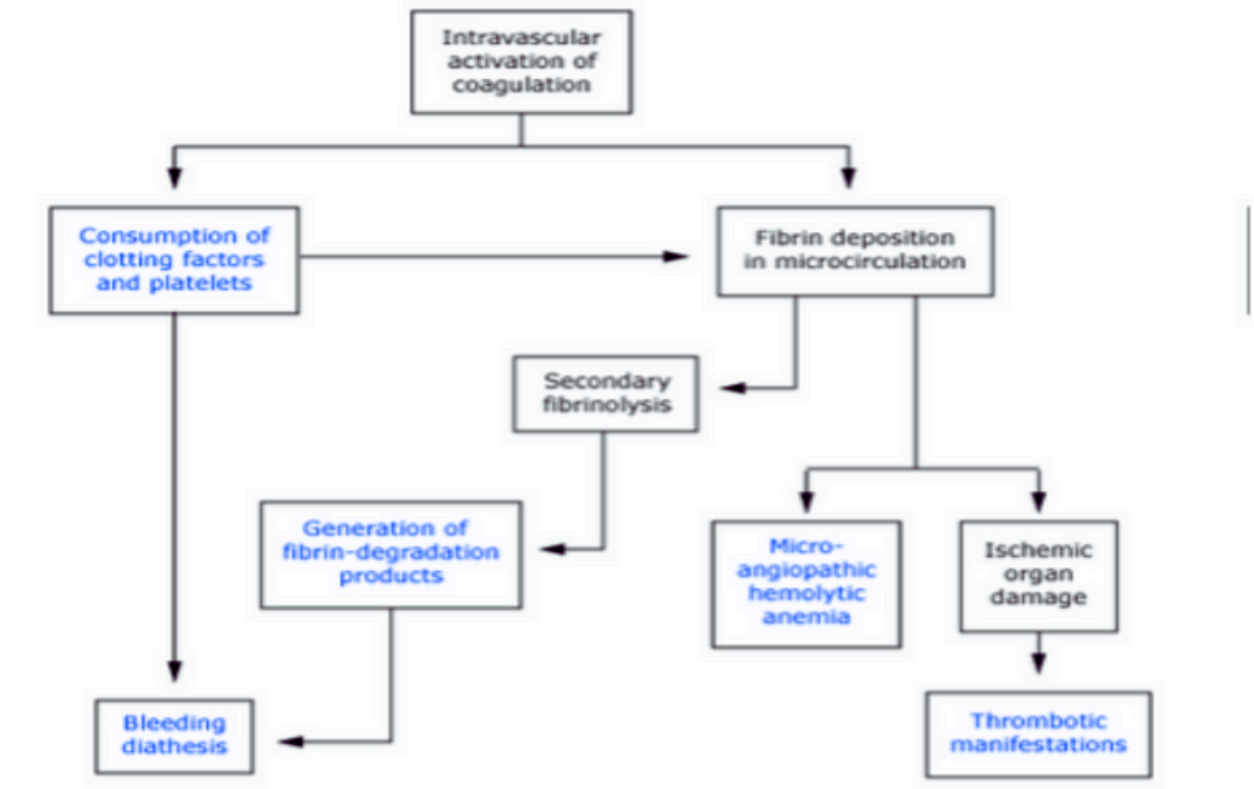
-End-organ damage

Obstetrical causes of DIC:

- Placental abruption
- missed abortion (early)
- fetal death (late)

case scenario of fetal death, the Q is what the investigations you should do? don't forget to mention DIC investigations

Pathophysiology of the clinical manifestations of disseminated intravascular coagulation



Management

Treatment of the underlying disease
Hemodynamic support is essential
Supportive modalities — Recommendations concerning the 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

-Treatment with platelets and coagulation factors with risk of having 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)
-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 to keep the fibrinogen level >100 mg/dL
-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) 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

-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 L/9^10* 70

-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

-Deep vein thrombosis

-pulmonary embolism

The most common cause of maternal deaths in developed countries

-Pregnant women are 4-5 times more likely to have VTE with same age non pregnant

of VTE in pregnancy are DVT 80%

are PE 20%

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 :

maternal heart disease	family history
Sickle cell disease	PET
systemic lupus	smoking
obesity	age >35 years
Diabetes mellitus	multiple gestation
hypertension	postpartum infection
recent surgery	bed rest -immobilization

Thrombophilia

Inherited or acquired :

When you suspect thrombophilia??

-History of recurrent early pregnancy loss of more than 3 mischarges

-2nd trimester missed mischarge without congenital anomalies

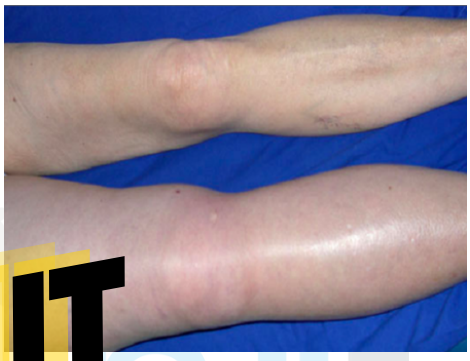
-Preterm delivery due to severe PET

-Fetal death

-severe IUGR

-abruption placenta

DVT



70 % -80% occur in the iliofemoral vein

Majority of cases left side

Symptoms: abdominal pain, back pain, leg swelling

Leg tenderness, warmth, erythema

Diagnostic tool :

-Venous duplex imaging

-MRI: sensitive 100%

-D-dimer test: non speci

mon cause of miscarriage in 2nd trimester is :

- **Open cervix** → **Cervical insufficiency**
- **Closed cervix** → **Tthrombophilia**

Pulmonary embolism

The greater risk is postpartum

After a C-section risk of 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 ****

start treat & investigate together

Diagnosis:

-careful history
-ABGs (respiratory alkalosis, hypoxia)
ECG (sinus tachycardia, right bundle branch block, S1, Q3, T3) deep s in I, Q, and inverted T III
-Possible chest X-ray
- Ventilation-prefusion scan primary diagnostic test safer than CT-angio in pregnant women
-Gold standard pulmonary angiography
-CT - angiography
High radiation* don't do it for pregnant women
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 the placenta
Don't secreted into milk
No teratogenicity
No fetal hemorrhage

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