PUERPERIUM AND PUERPERAL SEPSIS AND COAGUATION DISORDER

4 2 9
O B / G Y N T e a m

Sources:

- puerperium lecture
- Obstetrics and Gynecology by Elmar P. Sakala 2nd edition
- Hacker and Moore's Essentials of Ob/GYN

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The puerperium was usually considered to be the first 6 weeks after birth beginning with delivery of placenta and ending with return of the reproductive organs to their non-pregnant state.

Actually, the puerperrium various according to the organ system involved.

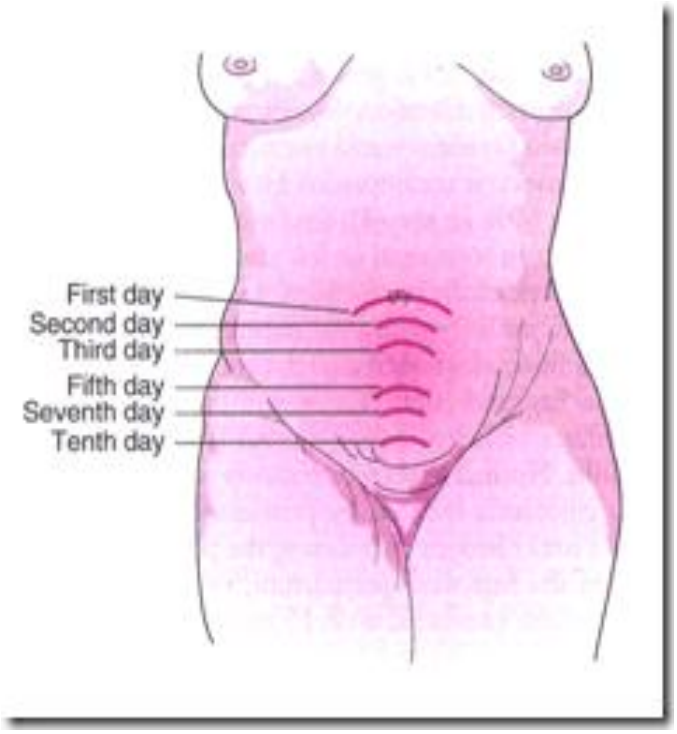
- Many changes reversed within 1 week
- Some alteration persists past 6 weeks
- Other changes are permanent.

I THE PELVIC ORGANS:

1. UTERINE INVOLUTION

the number of myomytreyal cells is unchanged , but the size of the cells decrease to one-twentieth of that during pregnancy .initially after delivery: uterine fundus is palpable at level of umbilicus and the uterus will weight 1000 g .

- 10-14 days later, disappears behind the symphysis pubis and weight 300g.
- This process is aided by oxytocin during breast feeding
- Delay in involution = infection or retained products of placenta



ENDOMETREAL REGENERATION

A. THE SUPERFICIAL LAYER OF DECIDUA BECOMES NECROTIC AND SLOUGHED OFF AS LOCHIA

✓ Lochia= blood, leucocytes, shreds of decidua and organisms.

☛ Decidua is cast off as a result of ischemia → lochial flow

- ☛ Initially; dusky red, fades after one week, clears within 4 weeks of delivery.

1- lochia rubra, which is red , is sloughed off immediately after delivery .
2- lochia serosa , which is pinkish-yellow , is sloughed off after the first postpartum week
3- lochia alba, which is whitish , is sloughed after the second postpartum week

B. THE BASALIS LAYER OF THE DECIDUA IS THE SOURCE OF THE NEW ENDOMETRIAL REGENERATION

C. WITHN 7 TO 10 DAYS, NEW EPITHILUM REGENERATION IS ESTABLISHED . BY THE END OF THE THIRED POSTPARTUM WEEK , TOTAL REGENERATION IS COMPLETE .

Placenta site involution . Within hours of delivery, multiple thrombosed vessels are seen at the site of placenta implantation .Exfoliation of the site causes necrotic slough of infarcted tissues, which is followed by a reparative regeneration .complete extrusion of the placental site takes up to 6 weeks . if the process is defective , delayed puerperal hemorrhage may occur (even weeks after delivery)

Uterine vessels : hypertrophied vessels undergo obliteration by hyalinization and are replaced by smaller caliber vessels .

2. THE CERVIX

- ☛ After delivery: flaccid, thin collapced , flabby and curtain like. Lateral laceration are usually present at the extrinsic OS
- ☛ Few days →original form & consistency
- ☛ External os dilated one finger (weeks—months)

The external OS is no longer round; it becomes fish-mouthed at old laceration

Internal os is closed to less than one finger by the 2nd week of the puerperium

3. THE VAGINA:

- ☛ 1st few days of puerperium, vaginal wall is smooth, soft and edematous
- ☛ Slight distention return to normal capacity in few days
- ☛ Episiotomy and tears of vagina and perineum heal well.
- ☛ Healing is impaired in presence of hematoma or infection

OTHER SYSTEMS:

BLADDER & URETHRA

Impact of labor and delivery: the bladder base may be traumatize by labor and delivery .mucosa may be edematous an hyperemic. Epidural anesthesia may decrease the sensation of fullness and perineal pain may inhibit normal voiding. These factors may contribute to the following:

a- bladder overdestention with myogenic decompensation leading to residual detrusor atony
b- incomplete emptying with increase postvoid residuals
c- susceptibility to urinary tract infection

Kidneys:

Mild proteinuria is noted in 50% of women for 1-2 days . creatinine clearance return to normal prepregnant values in 1 week .dilatation of ureters and renal pelvis reverses within 6 weeks . Renal hypertrophy may persist for a few months .

- Within 2-3 weeks →hydroureter and calycial dilatation of pregnancy is much less evident.

- Complete return to normal → 6-8 weeks

- Diuresis during first day

BLOOD

- ↓ Plasma volume

- Blood clotting factors and platelet count rise after delivery

- Fibrinolytic activity (which occurs during pregnancy) is reversed within 30 min. of placental delivery.

- total blood volume is normalized by 3 weeks post-delivery , with most change in 1st week

ENDOCRAINE CHANGES :

↓ in the following placentally produced plasma hormone concentration occurs.

A. Human placental lactogen (hPL) is undetectable 1 day after the delivery .
B. Human chorionic gonadotropin (hCG) is undetectable by day 14 postdelivery .
C. Estradiol levels decrease 90% within 3 hours , with a nadir at postpartum day 7 . the decrease in estradiol return to follicular phase levels in women who are :
    1. Nonlactating :20 days
    2. Lactating with menses : 70 days
    3. Lactating but amenorreheic :180 days

COMPLICATIONS OF THE PUERPERIUM

SERIOUS AND SOMETIMES FATAL DISORDERS MAY ARISE DURING THE PUERPERIUM

I. THROMBOSIS & EMBOLISM :

= One of the main causes of maternal death.

Patients with thrombotic thrombocytopenia have a rare syndrome characterized by thrombocytopenic purpura, microangiopathic heamolitic anemia transient and fluctuating neurological signs, renal dysfunction, and febrile course

II. PUERPERAL INFECTION:

The incidence of febrile morbidity after vaginal delivery is 6%-7% . After cesarean delivery, the incidence is twice the vaginal delivery.

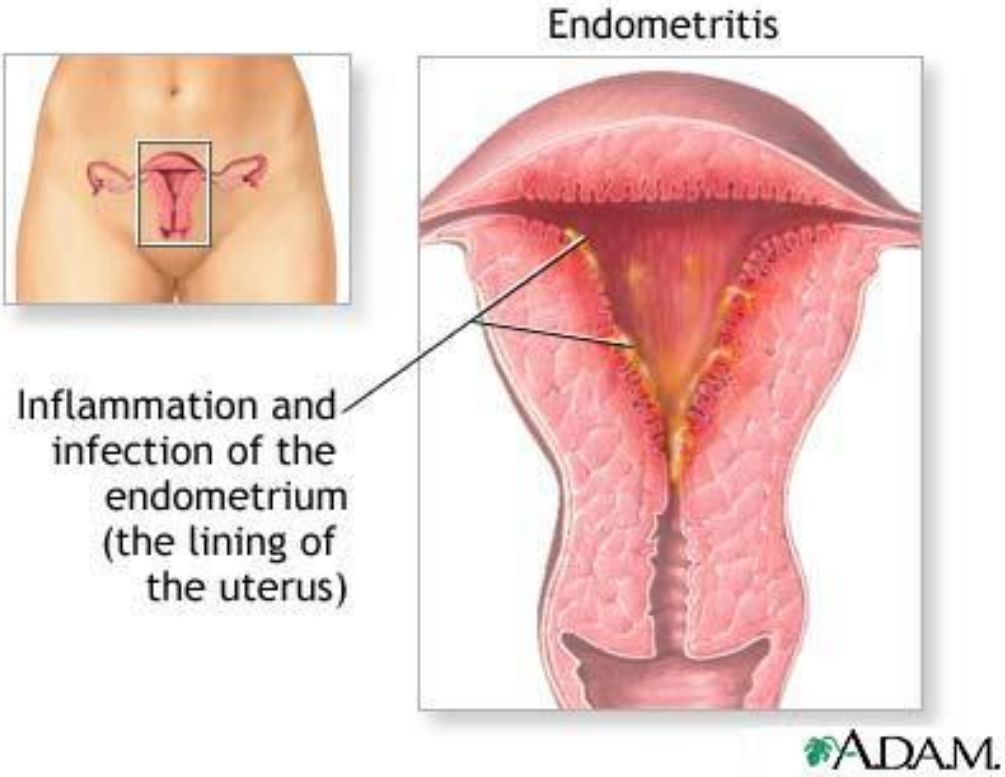
- *Puerperal Pyrexia*

= A clinical sign that merits careful investigation.

= A temperature of 38 C or higher occur for more than 2 consecutive days exclusive of the first postpartum day during the first 10 postpartum days in the first 14 days delivery .

CAUSES:

1. Urinary tract infection
2. Genital tract infection
3. Pelvic / intra-uterine infection (the most common cause of these fevers is endometritis)
4. Breast infection
5. Deep vein thrombosis (DVT)
6. Respiratory infection
7. Other non-obstetrics causes
8. Surgical wounds e.g. C.S.



INVESTIGATION

- Full Clinical Examination is needed extra pelvic causes of fever , such as breast engorgement , mastitis , aspiration pneumonia , atelectasis , pyelonephritis, thrombophlebitis , or wound infection , should be excluded .
- Abdominal pelvic CT or US can be helpful
- Cervical & HVS (high vaginal swap)
- Sputum C/S [culture and sensitivity] (if possible) & Blood culture

MANAGEMENT:

After investigation is sent for Start antibiotics if situation warrants

III. MASTITIS :

— Uncommon complication of breastfeeding and usually develops after 2 to 4 weeks

i. Acute intramammary mastitis => due to failure of milk withdrawal from a lobule

Rx → breast feeding, cold compress, antibiotics if no improvement within 24 hrs.

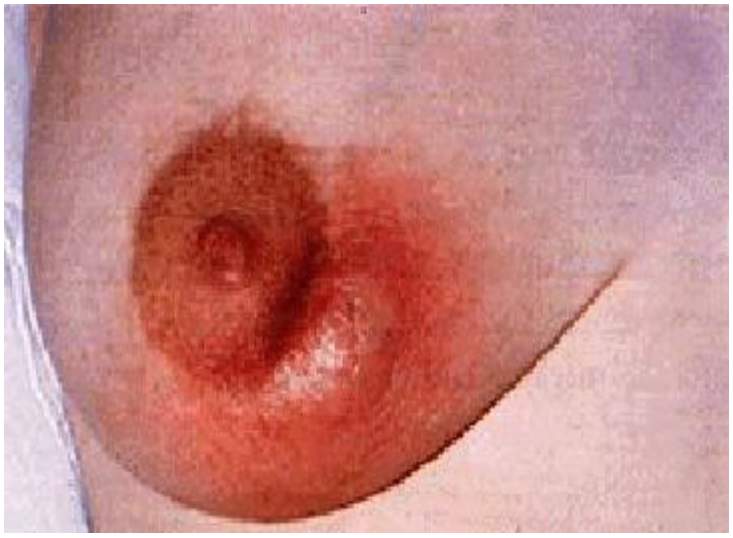
ii. Infective mastitis => usually due to staph. Aureus which originate from the infant oral pharynx

Rx. Antibiotics according to sensitivity (most of staphylococcus are penecillinas producing , so we need to use penicillinase resistant antibiotic .

iii. Breast abscess formation : Rare but preventable

Rx.- Surgical drainage if established.

- antibiotics, only if early.



IV. SECONDARY POSTPARTUM HAEMORRHAGE:

= Excessive blood loss from genital tract more than 24 hr and within 6 weeks of delivery

CAUSES

i. Retained placental fragments

ii. Blood clots

~ Usually within a few days of delivery

(Commonest between 8-14 days)

MANAGEMENT :

- Mild bleeding →observe
- IV fluid /blood + oxytocic drug
- Evacuation of uterus under GA if

- USS suggests presence of retained placental tissue

-Retained products of conception is suspected if => Heavy bleeding persists & the uterus is larger than expected and tender; the cervix is open.

V. PUERPERIAL MENTAL DISORDERS:

Category	Finding	Incidence	Postpartum time frame	Management
Postpartum blues	anxiety and tearfulness mood swings fatigue and headache	50-80%	Day 3-10 often history of PMS	Reassurance (self-limiting)
Puerperal Depression	More severe symptoms with feeling of hopelessness (pre	5-25%	Weeks 2-6 can last for months	Psychotherapy antidepressants often helpful

	exiting depression), it can happen with very traumatic delivery		High recurrence rate	Seldom needs hospitalization
Puerperal psychosis	Impairment of reality perception with Confusion, restlessness, extreme wakefulness hallucination and dilutions . Due to endocrine changes in puerperium, or are an uncovering of an underlying psychotic tendency at a vulnerable stage.	1-2 per 1000	Within the first 3 weeks High recurrence rate	Observe, discuss, mild sedatives If severe→ heavy sedation + transfer to psychiatric ward

CONSUPMTIVE COAGULOPATHY (DIC)

- A complication of an identifiable, underlying pathological process against which treatment must be directed to the cause.

MECHANISM :

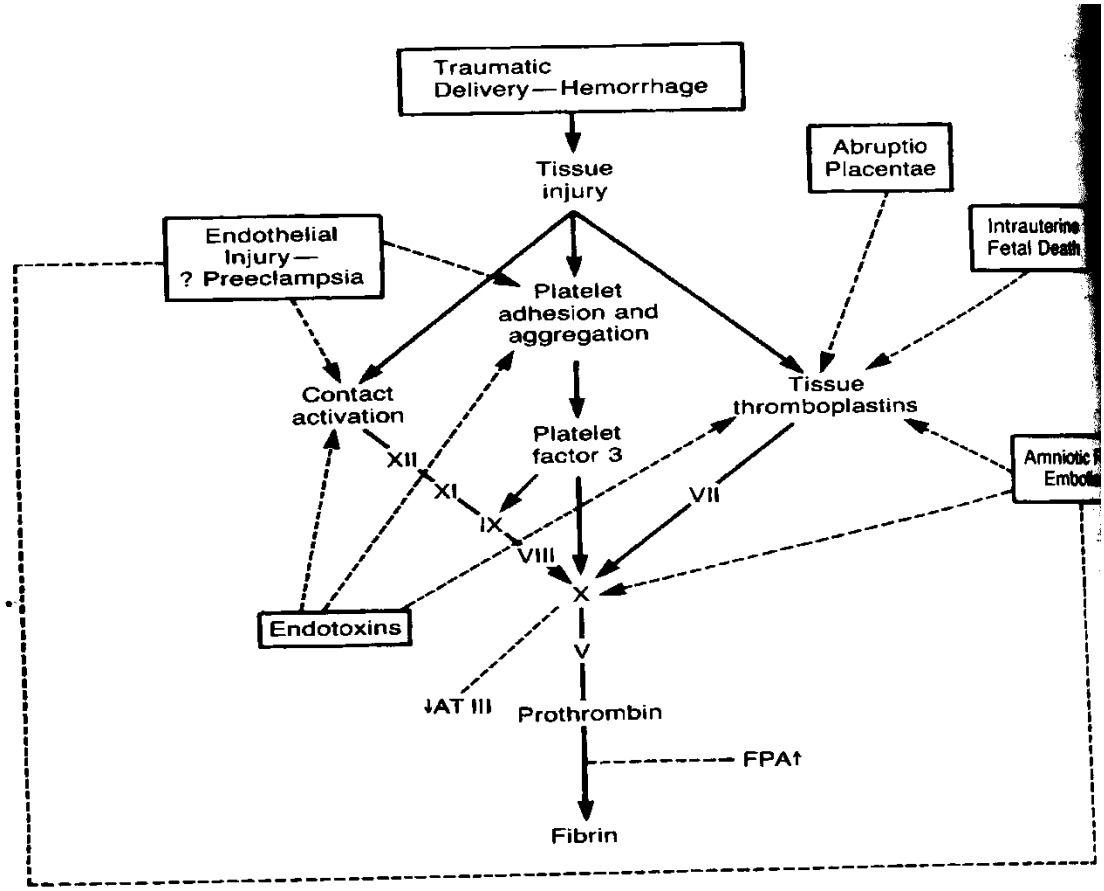
A. Inappropriate activation of the coagulation cascade within the maternal systemic circulation (Pregnancy Hypercoagulability) results from :

1- Endothelial cell injury.
2- Release of tissue thromboplastin (Extrinsic pathway activation) from autolysis of the decidua and placenta .
3- Release of phospholipids from RBC or platelet injury

- Activation of coagulation factors I (fibrinogen), VII, IX, X
- ↑ plasminogen; ↓ plasmin activity
- ↑ fibrinopeptide A, b-thromboglobulin, platelet factor 4, fibrinogen
- Direct activation of factor X by proteases
- Induction of procoagulant activity in lymphocytes, neutrophils or platelets by stimulation with bacterial toxins

B. If widespread , DIC can lead to

1- ↑ platelet aggregation , with resulting thrombocytopenia
2- Consumption of coagulation factors , leading to prolonged PT and PTT
3- Secondary activation of the fibrolytic system, leading to hypopofibrinogenemia and increased level of fibrin split products
4- Deposition of fibrin into multiple organ sites , resulting in ischemic damage .



SIGNIFICANCE OF CONSUMPTIVE COAGULOPATHY

- Bleeding
- Circulatory obstruction→organ hypoperfusion and ischemic tissue damage
- Renal failure, ARDS
- Microangiopathic hemolysis

CAUSES

- Abruptio placentae (most common cause in obstetrics)
- Sever Hemorrhage (Postpartum Hemorrhage)
- Fetal Death and Delayed Delivery >2wks
- Amniotic Fluid Embolus
- Septicemia

TREATMENT

- Identify and treat source of coagulopathy
- Supportive intensive care involves correction of shock , acidosis , and tissue ischemia
- Correct coagulopathy

- FFP, cryoprecipitate, platelets

FETAL DEATH AND DELAYED DELIVERY

- Spontaneous labor usually in 2 weeks post fetal death
- Maternal coagulation problems < 1 month post fetal death
- If retained longer, 25% develop coagulopathy
- Consumptive coagulopathy mediated by thromboplastin from dead fetus
- tx: correct coagulation defects and delivery

AMNIOTIC FLUID EMBOLUS

- Complex condition characterized by abrupt onset of hypotension, hypoxia and consumptive coagulopathy
- Characterized by a fulminating consumption coagulopathy , intense bronchospasm ,vasomotor collapse. It is triggered by an intravascular infusion of significant amount of amniotic fluid during a tumultuous or rapid labor in the presents of ruptured membranes.
- 1 in 8000 to 1 in 30 000 pregnancies
- “anaphylactoid syndrome of pregnancy”
- Pathophysiology: brief pulmonary and systemic hypertension→transient, profound oxygen desaturation (neurological injury in survivors) → secondary phase: lung injury and coagulopathy
- DIAGNOSIS is clinical

MANAGEMENT:

- supportive

  The principal objective of treatment is to support the respiratory system (usually with mechanical ventilator) correction of shock and replace the coagulation factors and monitoring for urine output .

PROGNOSIS:

- 60% maternal mortality; profound neurological impairment is the rule in survivors
- fetal: outcome poor; related to arrest-to-delivery time interval; 70% neonatal survival; with half of survivors having neurological impairment

SEPTICEMIA

- Due to septic abortion, antepartum pyelonephritis, puerperal infection

- Endotoxin activates extrinsic clotting mechanism through TNF (tumor necrosis factor)
- Treat cause

ABORTION

Coagulation defects from:

- Sepsis (*Clostridium perfringens* highest at Parkland) during instrumental termination of pregnancy
- Thromboplastin released from placenta, fetus, decidua or all three (prolonged retention of dead fetus)