Puerperium

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Objective:

At the end of this lecture, the 4th year student should be able to

1. *Define the puerperium*
2. *Understand the normal physical changes occur in puerperium*
3. *Define the Puerperal pyrexia*
4. *Describe the Causes of Puerperal pyrexia*
5. *Describe Management of each Causes of Puerperal pyrexia*
6. *Identify Other Abnormalities of Puerperium*
7. *Describe The post-natal examination*
8. ***Descripe the normal lactation and composition of the colostrum, Comparison of the constituents of human and cows'milk, Advantages of breastfeeding, physiology of lactation and Breastfeeding and breast cancer(homework)***

Definition:

The puerperium is the period following delivery of the baby and placenta to approximately 6 weeks postpartum. When the reproductive organs and maternal physiology return to the prepregnancy state.

Physiology of the puerperium:

The uterus:

Uterine involution: is the process by which the postpartum uterus, weighing about 1kg, returns to its prepregnancy state of less than 100g.

- *involution at the rate of **2 cm/day***
- *Involution occurs by a process of autolysis*
- *Involution appears to be accelerated by the release of oxytocin in women who are breastfeeding*

1. ***Immediately after delivery:*** *the uterine fundus lies about 4cm below the umbilicus (12cm above the symphysis pubis).*
2. ***2 weeks after birth:****the uterus becomes a pelvic organ.*
3. ***By 6 weeks****, it is usually normal size*
   A delay in involution in the absence of any other signs or symptoms (e.g. bleeding) is of no clinical significance

causes of delayed involution

1. *Full bladder.*
2. *Loaded rectum.*
3. *Retained products of conception (or clots).*
4. *Uterine infection.*
5. *Fibroids.*
6. *Broad ligament haematoma*

The cervix:

- *It involutes along with the uterus*
- *by 2 to 3 weeks(the internal os is closed, but the extnal os can remain open permanently, giving a characteristic appearance to the parous cervix).*

The vagina:

- *Vagina gradually diminishes in size.*
- ***by the 3rd week** rugae begin to reappear.*
- *The hymen disappears and is represented by: several small tags of tissue which are known as carunculae myrtiformes. This is a characteristic sign of parity*

Lochia:

Is the blood stained uterine discharge that is comprised of blood & necrotic decidua.

Types of lochia

Name	Color	Timing (days)	Contents
1. Lochia rubra	Red	1–4	Blood, decidua, fetal membranes, vernix, lanugo, and meconium
2. Lochia serosa	Yellowish, pink, and brownish	5–9	Leucocytes, cervical mucus, and organisms
3. Lochial alba	Pale white	10–15	Decidua, cells, leucocytes, mucin, cholesterin crystals, and fat cells

- ***Persistent red lochia** suggests delay involution that is usually associated with*

1. ***Infection:** offensive lochia may be accompanied by pyrexia & a tender uterus*
2. ***a retained piece of placental tissue***

Ovarian function:

- ☒ *The onset of the first menstrual period following delivery is depends on lactation*
- ☒ ***Non lactating women**:*
  - *the time of **ovulation** is about **6 to 8** weeks*
- ☒ ***lactating women**: the time of **ovulation** is **6** months. (anovulation and amenorrhea is due to elevated levels of serum prolactin associated with suckling)*

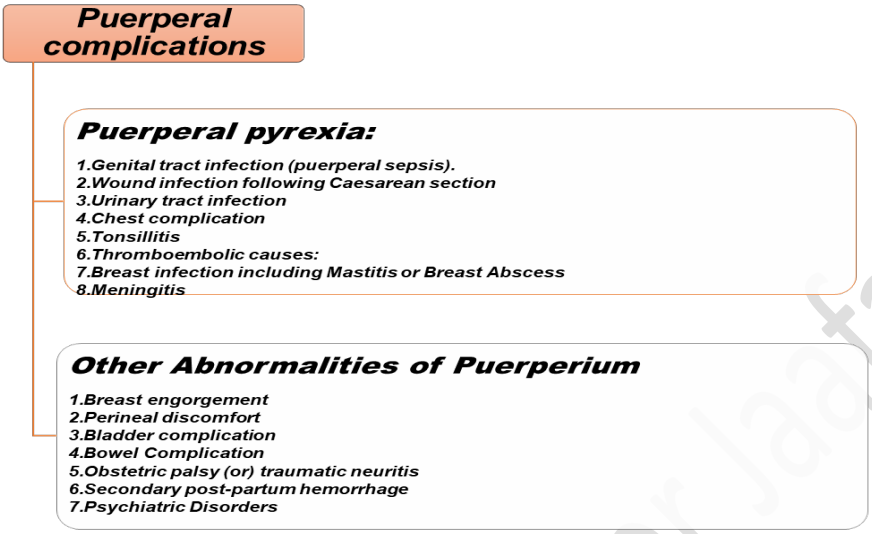
Urinary tract:

- *Normal pregnancy is associated with an increase in extracellular water and **puerperal diuresis** is a reversal of this process. occurs between the **2nd and 5th days.***
- ***Dilated ureters and renal pelvis** return to their prepregnant state within **8 weeks.***

Cardiovascular & coagulation changes

Table 31.1 Changes in the cardiovascular and coagulation systems during the puerperium.

	Early puerperium	Late puerperium
Cardiovascular		
Heart rate	Falls: 14% by 48 hours	Normal by 2 weeks
Stroke volume	Rises over 48 hours	Normal by 2 weeks
Cardiac output	Remains elevated and then falls over 48 hours	Normal by 24 weeks
Blood pressure	Rises over 4 days	Normal by 6 weeks
Plasma volume	Initial increase and then falls	Progressive decline in first week
Coagulation		
Fibrinogen	Rises in first week	Normal by 6 weeks
Clotting factors	Most remain elevated	Normal by 3 weeks
Platelet count	Falls and then rises	Normal by 6 weeks
Fibrinolysis	Rapid reversal of pregnancy inhibition of tissue plasminogen activator	Normal by 3 weeks



Puerperal pyrexia:

- *Defined as a rise of temperature reaching (38°C) or more (measured orally by standard technique) on 2 separate occasions at 24 hours apart (excluding first 24 hours) within first 10 days following delivery*

Causes of Puerperal pyrexia:

1. Genital tract infection (puerperal sepsis).
2. Wound infection following caesarean section.
3. Urinary tract infection.
4. Chest complication
5. Tonsillitis
6. Thromboembolic causes:
7. Breast infection including mastitis or breast abscess
8. Meningitis
9. Other incidental infections

1. Genital tract infection (puerperal sepsis):

- *Defined as: a genital tract infection following delivery,**is commonly due to***
  1. *Uterine infection (eg.endometritis)*
  2. *Perineal wound infection (includes infection of (episiotomy wounds , repaired lacerations & repaired perineal tears)*

- ***Organisms commonly associated with puerperal genital tract infection:*** *are polymicrobial with a mixture of aerobic and anaerobic organisms.*

1. ***Aerobes***
    a. *G+ve e.g.B-haemolytic streptococcus*
    b. *G-ve e.g. E-coli*
    c. *G-variable e.g.Gardnerella vaginalis*
2. ***Anaerobes*** *e.g Peptococcus sp*
3. ***Miscellaneous*** *e.g ChlamydiaTrachomatis*

Common risk factors for puerperal infection:

Antepartum factors

1. *Obesity*
2. *Diabetes*
3. *Anemia*
4. *Human immunodeficiency virus (HIV).*
5. *Preterm labour*
6. *Prolonged rupture of membranes >18 hrs*
7. *Chorioamnionitis*
8. *Cervical cerclage*

Intrapartum factors

1. *Prolonged labor/prolonged second stageof labour*
2. *Instrumental delivery.*
3. *caesarean section.*
4. *manual removal of the placenta.*
5. *retained products of conception*
6. *Internal fetal monitoring.*
7. *Foreign body*
8. *Hemorrhage – antepartum or postpartum*

Symptoms of puerperal pelvic infection(puerperal sepsis):

1. *fever, rigor ,Malaise, headache*
2. *Abdominal pain*

3. *vomiting & diarrhea.*
4. *Offensive lochia.*
5. *Secondary PPH.*

Signs of puerperal pelvic infection

1. *High temperture*
2. *High puls rate*
3. *Infected wound (perineal wound or C/S), may cause break down of wound*
4. *Uterus- tender& large. (sub involution of the uterus)*
5. *Paralytic ileus*
6. *Peritonism.*
7. *Indurated adnexae (parametritis).*
8. *Boggines in the pelvis(pelvic abcess)*

Complication of pelvic infection:

1- *Septicemia:suggested if a patient is more seriously ill, shocked, a temperature of more than 38.3°C or less than 36°C),breathless or confusion*
2- *Wound dehiscence*
3- *Pelvic abscess*
4- *Septic thrombophlebitis*
5- *Subsecquent subfertility.*

Diagnosis

- ***Evaluation of a febrile postpartum patient should include a careful history & physical examination.***
- ***Extra pelvic causes of fever should be excluded***

Investigations for puerperal genital infections:

1. *full blood count (FBC) :(anemia leukocytosis,thrombocytopenia)*
2. *renal function test and electrolyte*
3. *High vaginal swab (infection screen)*
4. *Blood culture*
5. *Pelvic u/s (retained product & pelvic abscess)*

Management *:depending on the cause*

1. treatment of endometritis

- *Gentamicin (2 mg/kg IV loading dose followed by 1.5 mg/kg IV every 8hours) and Clindamycin (900 mg IV every 8 hours)*

Or

- *Gentamicin (2 mg/kg IV loading dose followed by 1.5 mg/kg IV every eight hours) and Ampicillin (1 g IV every 6 hours) and Metronidazole 500 mg IV q 8 hours*

- ***The treatment is continued until the infection is controlled for at least 7–10 days***

2. Infected episiotomy or perineal tears

1. *If just infected treated with broad spectrum antibiotic (e.g.) coamoxiclav, or cephalosporin plus metronidazole*
2. *If **opening repaired perineal tears & episiotomies***
    - *The wound should be irrigated twice daily*
    - *Healing should be allowed by secondary intention*
    - *Sometimes secondary suturing may be required after granulation tissue has appeared*
3. ***severe sepsis:***
    - *Immediate administration of high dose of combind broad-spectrum intravenous antibiotics without waiting for microbiology results.*
    - *transfer to intensive care if need*

2. Wound infection following caesarean section:

- *risk factors include*

1. *Obesity*
2. *corticosteroid therapy*
3. *poor haemostasis and haematoma at surgery site*

Presented with:

1. *Fever*
2. *Wound*

- *red painful suture line*
- *Persistent tenderness*
- *Purulent drainage.*

Management:

1) *Swab for Gram stain ,cultures and sensitivity from wound material.*
2) *Antibiotics should be given*
3) ***If infections involve skin and subcutaneous tissue:***
   a. *Wound should be drained, irrigated, and debrided*
   b. *Consider closure of incision when wound healthy.*
4) ***If infections involve fascia and muscle*** *(necrotizing fasciitis) need debridement in the operating room under anesthesia.*

3. Urinary tract infection:

- ***Most common organism*** *involved are E-coli, proteus & klepsiella.*
- ***symptoms***

1. *Increased frequency of micturition, dysuria or urgency.*

2. *Rigor may present in pyelonephritis.*

3. *loin pain &tenderness*

Diagnosed *urine microbiology, culture and sensitivity*

Treatment*: antibiotics*

4. Chest complication:

appear in the first 24 hours after delivery, particularly after general anesthesia.

- ***Atelectasis:***
- ***Aspiration pneumonia (mandleson's syndrome):***
- ***Chest infections, e.g. pneumonia, bronchitis***

Present with *cough, purulent sputum & dyspnoea.*

Diagnosed *by sputum microbiology, culture and sensitivity, chest x-ray.*

Treatment *by physiotherapy & antibiotic*

5) Thromboembolic causes:

1- Superficial thrombophlebitis
2- Deep vein thrombosis
3- pulmonary embolism

- ❑ *The risk rises 5-fold during pregnancy and the puerperium*
- ❑ *If deep vein thrombosis or pulmonary embolism is suspected, full anticoagulant therapy (**heparin**) should be started and **D-dimer,Duplex colure ultrasound and /or Ventelation-Perfution scan (V/Q)** done within 24–48 hours*

6) Breast infection : including mastitis or breast abscess

Infection of the breast either due to:

1. ***acquired in hospital, most common infective organism is staphylococcus aurous***
2. ***Outside the hospital caused by host flora, including Staphylococcus species** from baby's nose or throat**, and most often the result of incomplete evacuation of the breast.***

Symptoms &sign

1. ***The affected segment of the breast is painful &reddened & swollen. usually unilateral.***
2. ***Flu-like symptoms, malaise***
3. ***pyrexia& rigors: 3rd to 4th postpartum week***
4. ***tachycardia***
5. *An abscess should be suspected when:*
   - ***Fever does not disappear within 48 to 72 hours of mastitis treatment***
   - ***when a mass is palpable***
   - ***Erythematous segment of the breast with swelling or even fluctuation***

Investigations

1. *express of milk either manually or by electric pump The milk should be sent for microbiology culture and sensitivity*
2. *Ultrasound of the affected breast*

Treatment is:

1. *ceasing breast feeding from affected breast. empty the affected breast by means of a breast pump (manual expression is such cases is not possible due to the extreme tenderness and resultant pain)*
2. *Continue breastfeeding from the normal breast*
3. *Flucloxacilline can be recommended while awaiting sensitivity results.*
4. *10% of women with mastitis develope breast abscess; treatment is by a circumareola incision followed by drainage under general anesthesia, Leave a drain*

8) Meningitis:

Present after *epidural/spinal anesthetic with headache, neck stiffness*
Diagnosed: lumbar *puncture*
Treatment *is with antibiotic*

9) Tonsillitis:

Present with: *sore throat*
Diagnosed *throat swab*
Treatment *antibiotic*

10) Other incidental infections:

- ***Tuberculosis***
- ***Malaria***
- ***Typhoid***

Other Abnormalities of Puerperium

1. breast engorgement
2. Perineal discomfort
3. Bladder complication
4. Bowel complication
5. Obstetric palsy (or) traumatic neuritis
6. Psychiatric disorders
7. Secondary post-partum haemorrhage: تشرح بمحاضرة منفصلة

1) breast engorgement

usually begin by the 2nd or 3rd day if breast feeding has not been effectively established

Diagnosis:

1. *Breasts swollen, tender, tense and warm*
2. *temperature may be mildly elevated , rarely exceeds 39°C and characteristically lasts no longer than 24 hours.*
3. *painful axillary lymph node enlargement*

Treatment:

1. *Manual emptying the breasts following breastfeeding*
2. *Supportive brassiere*
3. *Ice packs*
4. *Analgesics*

Note: ***Suppression of lactation by a pharmacological approach to patient has dead baby or breast feeding is contraindicated include:***

1. ***cabergoline 1 mg stat to prevent lactation or 0.25 mg twice daily for 2 days to suppress established lactation.***

- ***Bromocriptine is contraindicated due to the risk of heart attack and stroke.***

Note: ***Contraindications to breast-feeding***

1. ***Mothers with the following infections:***
   I. *HIV infection.*
   II. *Breast lesions from active herpes simplex virus.*
   III. *Tuberculosis (active, untreated).*

2. *Mothers who* ***abuse drug***
3. *Mothers undergoing* ***radiotherapy***
4. ***Medications: e.g.***
   1) ***Cyclophosphamide.***
   2) ***Methotrexate.***
   3) ***Cyclosporine.***
   4) ***Doxorubicin.***
   5) ***Lithium.***

2)Perineal discomfort:

last about 10 days.

It is greatest in women with

1. *episiotomies*
2. *tears*
3. *Instrumental deliveries.*

Treatment

1. *Local cooling.*
2. *Analgesia: paracetamol, diclofenac suppositories.*

3)Bladder complication

a- Voiding difficulty

due to:

1. *pain or peri-urethral oedema (multiple/extended lacerations or tears,vulva-vaginal haematoma)*
2. *Those with (epidural/ spinal) anesthesia because the bladder may take up to 8 hours to regain normal sensation.*

b- Urinary incontinence:

because :

- *vesico-vaginal*

- *urethra-vaginal*
- *uretero-vaginal fistula*

Due to pressure necrosis of bladder or urethra may occur following prolonged obstructed labour, usually appear in the 2nd week

4) Bowel Complication:

A. Constipation:

due to :

- ❑ *pain &fear of evacuation of the bowel*
- ❑ *dehydration during labor.*

B. Fecal incontinence: Due to

- ❑ *Damage of anal sphincter during delivery*
- ❑ *3rd& 4th degree vaginal tears*
- ❑ *(recto-vaginal fistula)*

5)Obstetric palsy (or) traumatic neuritis

one or both lower limbs may develop sign of a motor &/ sensory neuropathy following delivery

the patient present with

1. *foot drop*
2. *Paresthesia.*
3. *Sciatic pain*
4. *Muscle wasting*

The mechanism of injury

- *due to herniation of lumbosacral discs (usually L4 or L5)*

Treatment

1. ***bed rest***
2. ***analgesia***
3. ***Physiotherapy.***
4. ***Orthopedic opinion***
5. ***Firm board beneath the mattress***

8. Psychiatric Disorders

There are three clinical syndromes:

1) Postpartum Blues- *Maternity blues- **"The baby blues";***

- *It is a transient, self-limiting condition*
- *starts 3–5 days after delivery and may persist for up to 2 weeks.*

Manifestations are:

1. *Sad, anxious, or overwhelmed feelings*
2. *Crying spells*
3. *Loss of appetite*
4. *Difficulty sleeping*

Treatment is:

1. *reassurance and psychological support by the family members.*
2. *If the condition persists, the patient should be referred for psychiatric evaluation*

2) Post-natal depression :

(can begin any time in the first year** with amore gradual onset**)

- *Same signs as baby blues, but they last longer and are more severe*
- *Thoughts of self-harm/suicide.*
- *Thoughts of harm to the baby*
- *a high recurrence rate in subsequent pregnancies and lifetime risk of depressive illness.*
- ***Management:***
  - ***Mild to moderate depression** may respond to self-help strategies and non-directive counselling.*
  - ***Severe depression** will require antidepressants and/or psychotherapy. Fluoxetine or paroxetine (serotonin reuptake inhibitors) is effective and has fewer side effects. It is safe for breastfeeding*

3) Puerperal psychosis

- *is defined as major depression with psychotic features*
- *The onset is characteristically abrupt, with a rapidly changing clinical picture*
- *It may recur with each subsequent pregnancy.*

Symptoms of puerperal psychosis

1. agitation.
2. confusion.
3. Delusions/hallucinations.
4. Failure to eat and drink.
5. Thoughts of self-harm.
6. with or without symptoms of depression

Management:

1. multidisciplinary care in mother-and-baby unit
2. (antidepressants, antipsychotics, or mood stabilizers) for at least 6 months and, in some cases, electroconvulsive therapy (ECT).
3. Most patients make a full recovery, but recerrence rates are high in the long term.
4. those with previous history of puerperal psychosis should be referred to specialist perinatal mental health service antenatally so appropriate care plan and the use of prophylactic medication soon after delivery.eg. prophylactic lithium, started on the first postpartum day.

The post-natal examination

- **It carried out:**
  - at 6 weeks postpartum

- **The history includes**
  1. General well-being
  2. lochia has stopped or not
  3. any breastfeeding difficulties
  4. any urinary or bowel symptoms, e.g. incontinence
  5. any anxiety or depression?
  6. The relationship with the baby?
  7. what contraception is being used?
  8. any sexual difficulties?

- **Examination of the Mother:**

1. Assessment of women's mental & physical health
2. general examination, weight, pallor, blood pressure

3. *tone of the abdominal muscles*
4. *examination of the breast.*
5. *cervical smear may be taken for exfoliative cytological examination if this has not been done previously*

- ***investigations*** *depending on the clinical need (e.g. hemoglobin)*
- ***Discuss with the patient the contraception***

❑ ***Do not wait until first menses to begin contraception; ovulation may come before first menses.***

❑ ***Types of contraception***

1- exclusive breast-feeding: *to prevent ovulation.It can be used as a contraceptive method. It is effective for up to* ***6 months***

2- IUCD: *it is best to wait at least* ***4–8 weeks*** *to allow for involution due to risk of expulsion and uterine perforation if earlear*

3- COCP*: increase the risk of thrombosis &reduce the amount of breast milk,but in patients who do not desire lactation it should be commenced* ***4 weeks postpartum****.*

4- Progestgen-only pills (mini-pills): *should be commenced about day 21 following delivery. without substantially reducing the amount of breast milk.*

5- Injectable contraception *:(such as depot medroxyprogesterone acetate (Depo-Provera™) given 3 -monthly preferably be given 5-6 weeks post-partum.*

6- Sterilization*:*

- *In patients who have completed their families; it can be performed during C/S.*
- *or delayed until after 6 weeks postpartum by laparoscopy*

The end