

PUERPERIUM

Defined : period that last from delivery of placenta till 6 weeks after delivery , during which pelvic organs return to non pregnant state , metabolic changes of pregnancy reversed & lactation established

Physiological changes

pelvic organs : uterus

Principle changes is uterine involution, after delivery uterus undergo rapid & massive changes by process of catabolism of muscle fiber

Uterine fundus is usually palpable in region of umbilicus

10 days ...no longer palpable as an abdominal organ

Involution is aided by release of oxytocin during breast feeding

By 6 weeks the uterus return to non-pregnant size

Uterine weight is one (kg) at the time of delivery , shrink to 50-60 gm within few weeks by autolysis

Cervix

Flaccid & curtain – like after delivery, return back within few days

External os remain open for few weeks or months, but internal os closed during second week

Vagina

vaginal wall are smooth , soft & edematous

Distension result from delivery

Episiotomy and tears healed by granulation tissue

Endometrium

Regenerates within 6 weeks & menstruation occur within this time if lactation ceased

In lactating mother menses may suppressed and delayed for few months

Endometrial cavity decidua casted off as result of ischemia and losted as lochia , dusky red at the start then become brown ,consisted of blood , bacteria and sheded endometrium (2- 14 days) but may persist up to 6 weeks

Ovarian activity

Non lactating ,activity commencing as early as 27 days

In breast fed may delayed up to 6 months

Menses occur 12weeks in non lactating in 70%

Other system

Urinary system

Hydroureter & caliceal dilatation is less evident within 2-3 weeks

Complete return to normal takes 6 – 8 weeks

Diuresis is evident during first day

CVS&coagulation

Heart rate & cardiac output fall in early puerperium

Stroke volume & BP increase

plasma volume increase then fall

Fibrinogen increase in first week

Clotting factor remain elevated

Platelet fall then raised

Weight loss

Immediate loss of 4.5- 6 kg following delivery of fetus , placenta & amniotic fluid

By 6 weeks28% return to prepregnancy wt

If wt gain during pregnancy more than 15 kg ,no wt loss after 6 weeks & gain 5 kg indefinitely

- Lactation has no effect on wt loss

Hair loss

- May take place , it take 6months to one year to return to normal

Management

After delivery & during patient stay in hospital

- Ask patient if she had any complaints
- Check pulse , BP ,temp , fundal height ,& lochia
- Inspect perinium if there is trauma or episiotomy for any sign of infection
- Check urine output if satisfactory & bladder
- Encourage early ambulation as soon as possible
- Encourage exercise for limbs to prevent DVT
- Exercise of abdomen& pelvis to restore normal tone

Infant feeding

The major physiological event of puerperium is establishment of lactation

Advantages

1.Nutritional aspect

human milk is not constant , its content varied at different stages

<u>Constituent</u>	<u>human milk</u>	<u>cow milk</u>
Energy (kcal)	75	66
Protein (g\100ml)	1.1	3.5
Fat (g\100ml)	4.5	3.7
Lactose	6.8	4.9

Sodium (mmol\100ml) 7 2.2

Human milk contain less protein but more fat & lactose

Fat content (long chain unsaturated fatty acid) important for neurological development

2. Protection against infection

mechanism :

Contain lactoferrin (bind to iron & inhibit growth oh E.COLI

Encourage colonization of gut by non pathogenic bacteria (flora)which competitively inhibit pathogenic one

Contain bactericidal enzyme (lysozyme)

Most important is immunological IgA

Contain living cells polymorphs , lymphocyt ...

mother ingest protein → stimulate immune system → IgA → secreted with milk →remain in infant gut unabsorbed & attached to offending pathogens

3. Neurological development

Increase IQ (intelligence quotient)

4. Atopic illness

Lower incidence of eczema & asthma

Increase level of IgE

5. Disease in later life

decrease juvenile DM & neoplastic disease

Early exposure to bovine milk (albumin)trigger autoimmune process lead to DM

Decrease necrotizing enterocolitis in preterm infant

6. Obesity : artificially fed baby carry twice risk of obesity

7. advantages to the mothers :

Decrease risk of breast cancer

Good natural contraceptive effect

Mechanism of lactational amenorrhea& contraception

suckling induce changes in hypothalamus

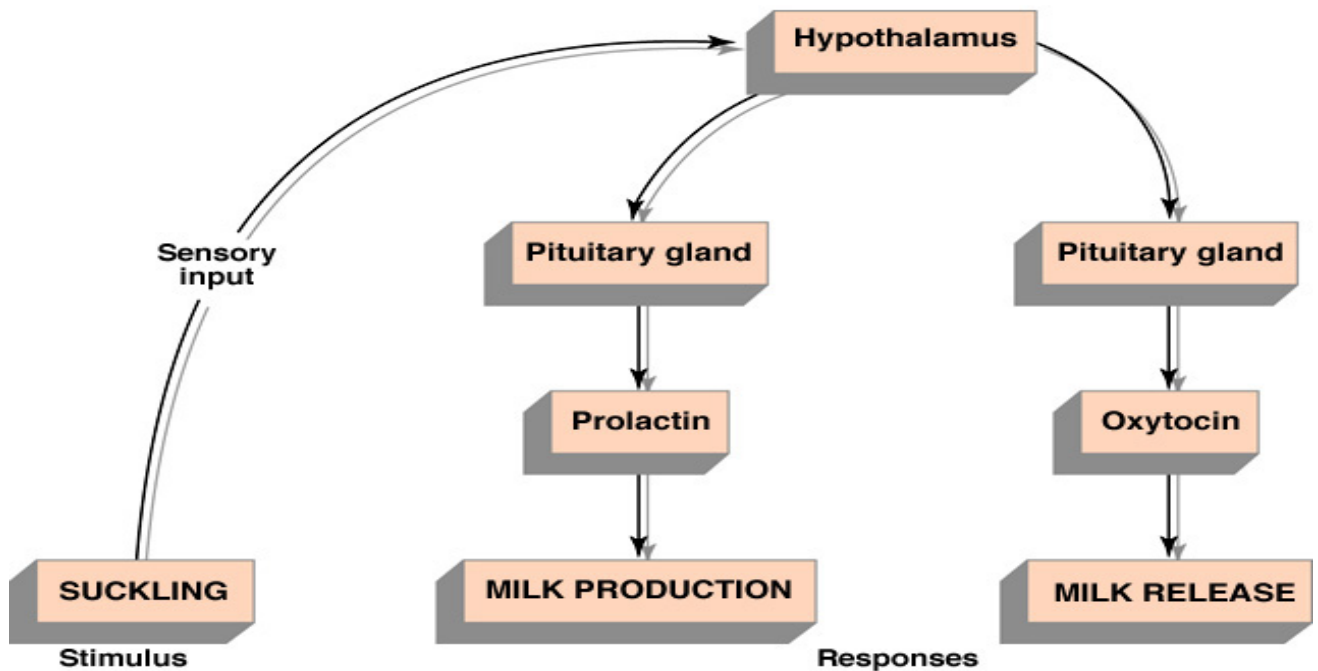
During lactation hypothalamus become more sensitive to negative feedback effect & less sensitive to positive feedback effect of estrogen

Inhibition of normal pulsatile release of LH

Depend on frequency & duration of suckling

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Control of Lactation



Physiology of lactation

1. At puberty estrogen stimulate milk duct & secretory alveoli
2. during pregnancy both estrogen & progesterone are necessary for mammary development also prolactin , growth hormone , & adrenal hormones
3. During pregnancy minimal amount of milk formed in breast despite increase in lactogenic hormones due to inhibitory effect of high estrogen & progesterone

Two mechanism control lactogenesis

1. Milk production

2. Milk ejection

Milk production : Prolactin release → act on glandular cells → increase milk production

The stimuli are: Suckling

Increase sensitivity of areola to tactile stimuli

Ejection : milk transfer to nipple by contraction of sensitive myoepithelial cells around the milk secreting glands & dilated ducts

Responsible hormone : oxytocin (milk letdown)

The stimuli : Suckling

Sensory input : seeing or hearing baby cry

First 24 hrs ... small volume (colostrum)

Increase with suckling : day6 (500 ml)

Fully established : daily 800ml