Breast feeding

***Neonatology:-**

Feeding

What are the advantages of breast milk or breast feeding?

Breast feeding:

Availability ; cheep ; decreased incidence of breast cancer : improve mother infant bonding.

Physiology of location:
-preparation of breast for lactation:-

- a) **During pregnancy:**
  estrogen ;progesterone ; placentae lactogen → development of acini and duct system
- b) **In puerperium:**

Milk secretion initiated by prolactin.

c) Maintenance:

1) prolactin.

2) suckling or breast feedingreflexes are the most powerful stimuli.

Maternal reflexes:-

Initiated by suckling of the nipple.

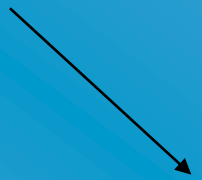
1) Nipple erection reflex.

2) Prolactin reflex: sensory stimuli to hypothalamus → Anterior-Pituitary → prolactin → glandular cells of breast acini → milk secretion .

(3) Oxytocin reflex (let down reflex or milk ejection reflex) from post. pit

contraction of neuroepithelial cells

Surrounding alveoli



ejection of milk.

Neonatal feeding reflexes:-

1) Rooting reflex: touching the check or circumaural area leads to turning the head to the side of the stimulus leading to opening the mouth seeking for the nipple.

2) Suckling reflex: tactile stimuli of the nipple or aereolar tissue filling the mouth leading to milking action by tongue against hard palate.

3) Swallowing reflex: follows suckling or allows interruption to breathing to prevent choking during swallowing.

Composition of breast milk:-

a) Colostrum:

Bright lemon yellow ; alkaline ; viscous fluid secreted during first 5-7 days : compared to mature milk it is :

1) More rich in protein (2.3gm/dl) but less CHO or fat.

2) Very rich in immunoglobulin especially IgA.

3) rich in cholesterol , Na , K , Cl , Zinc , Copper , leucocytes (macrophages , lymphocytes)
Antibacterial (lactofissin , lactofirrin)
more rich in Vit.A than mature milk.

4) Laxative effect by enhancing GIT motility leading to prevention of meconium blood formation which is the most common cause intestinal destruction.

5) **reducing enterohepatic circulation and prevent hyperbilirubinaemia.**

* In summer weather when colostrumn is in small amount and due to hot weather dehydration may occur manifested by fever ; when baby is alert and reddish in colour.
R: oral hydration ; if severe degree leading to IV fluids should be given.

Advantages of breast feeding:-

1) Balanced diet.
2) Anti-anaemic.
3) Anti-allergic.
4) Anti-rechitic.
5) Anti-infective.

1) Balanced diet:

1- protein: 70% soluble ; easily digested.

2- fat: essential long chain ; needed for brain develop.

3- high fat: in hind milk →satiety .

4- high cholesterol: myelination of nervous system.

5- high lactose galactose →brain growth.

6- colostrum: increasing zinc →prevent necrotizing enterocolitis.

7- high content of E,C,D,A and niacin.

8- decreasing phosphate →prevent neonatal hypoealcemic convulsions.

2) Anti-anaemic:

Lower nisk of iron deficiency during the first 6 months of life because:

a- Higher iron content (1.5 times cow's milk).

b- Better iron absorption due to acidic lawel medium and to the presence of large amounts of vitamins C,E and copper.

c- No iron loss in stools (allergy to cow's milk can lead to repeated microhemorrhages).

Physiology:-

At birth Hb 17.5-22.5 mg%

hematocrit 55%

* HbF 70% (,) adult Fb 30%

HbF is high intrauterine due to:

1- lower oxygen solution: oxygen tension in the uterus is 68% in comparison to outside the uterus oxygen tension is 98%.

2- very high metabolic rate needing more oxygen consumption which leads to relative hypoxia → stimulating erythropeiosis of the haly to increase cavaige capacity in the blood.

* After heath there is gradual decrease in gamma chain and gradual increase in beta chain till full switch off at six months (i.e. thalassaemia becomes apparent).
* Sudden drop of erythropiosis (3 months) → rest in bone marrow ; this added to increase growth of the fetus and increase in blood volume (dilution of blood)

+

Aging in RBCs (fetal Hb RBCs life span is 90 days).

These will lead to paller of the skin → physiological anaemia.

•Antioxidants can be given in first 3 months vit.E,A,C to increase iron and calcium absorption.

* Iron should not be given in first 3 months.

•Vit.E and C are very important as baliy may need oxygen resusetation , as it can cause :

1- increased rate of RBCs destruction or increases physiological anaemia. Vit.E causes stabilization of RBCs cells leading to decrease in the incidence of physiological anaemia.

2- Injuries to eye: reterolental fibroplasia and retinopathy of retinal blood vessels. Vit.E causes decrease in all these complications.

3- Broncho-pulmonary dysplasia : vit.E stalulises the pulmonary cells.

*** During the first 3 months iron is not needed as bone marrow not synthesizing RBCs in first few months. Supplying iron causes damage to RBCs → increasing hemolysis → increasing anaemia.**

* Breast milk contains lactoferriten which absorbs iron from bacteria → decreasing effect of infection.

* Iron supplement flourishes the growth of bacteria → increasing rate of bacterial infection

3) Anti-allergic:

It protects against allergic diseases such as infantile eczema , allergic rhinitis , asthma and allergic gastroenteropathy.

-Mechanism:

As in the intestinal tract there are minute pores which can pass high molecular protein directly into the circulation leading to antibodies formation i.e. complement formation in **GIT** → vasculitis → oozing of blood → anaemia (on long run).

Breast milk has secretory immunoglobulin A (IgA) which lines the GIT and closing the pases leading to no leakage of lactoproteins into the circulation and no formation of antibodies.

- **In the skin complement fixation leads to Eczema.**
- **In the nose: Rhinorrhoea.**
- **In R.T. → hyperactive airways → asthma , wheezing.**

4) Anti-ricketic:

Breast milk lower incidence of richetic due to :

a- higher content of biologically active vit.D.

b- Ideal Cal/phosph ratio helps optimal absorption of both. (Ca/P ratio = 2:1).

c- higher lactose content enhances calcium absorption from the gut.

d- no calcium loss in stools in the form of calcium palmitate (insoluble)

Early rickets:-

Early signs or symptoms:

-Sweating; irritability; sleeplessness.

- No exposure to direct sunlight.

- **Craniotapes:- "up to 9 months only"**

It is used to determine the hardness of the skull.

- **It can be present in premature infants i.e. softness at the periphery of bones.**

*** Ricketsial softness is at the centre; near the ossification centres.**

Requirement:-

Full term baby needs 400IU/day

Preterm 1000IU/day

Egg yolk once daily supplies vit.D from 7th month.

* Sever malnutrition leads to rickets in older children.

5) Anti-infection property:

i.e. protection from GIT and respiratory infections:-

Breast milk has a living property ; it contains living cells from the mother i.e. Pyer's batches in the mother circulating blood reach the bowel of the baby (supplying it with macrophages and lymphocytes). They reach the baby Pyer's batches in the intestine and increasing it's cell-mediated immunity.

Characteristics:-

1- Contains bacterial and viral antibodies (immunoglobulins).

2- Secretory IgA → protectine coating of GIT mucosa.

3- Lactoferrin (iron-binding protein) inhibits growth of E-coli by depriving it from iron.

4- Lactose and bifidus factor promote growth of protecting flora (lactobacilli).

5- Lipase cells giardia lamblia and entamebia histolytics.

6- Milk macrophages phagocytose and kill bacteria and fungi.

7- Milk macrophages synthesize complement , lysozyme and lactoferrin.

8- Milk B-lymphocytes secrete IgA.

9- Milk T-lymphocytes involved in cell-mediated immunity.

6) Anti-inflammatory:-

Contains - tocopherol ; antioxidants , cytoprotectine agents.

Management of breast feeding:-

- 1) Preparation of prospective mother:

a- emotional support.

b- education on benefits of B.F. and Technique.

c- good maternal health and nutrition.

d- avoidance of drugs that interfere with breast feeding i.e. ergometrine ; sedatives ; analgesics.

2) Early initiating of breast feeding:

Within first 30-60 minutes after delivery :

a- Psychological bonding by skin contact is maximal.

b- Rooting and suckling reflexes are maximal.

c- Suckling stimulates milk secretion or let down reflex.

d- Colostrum has nutritious anti-infective characters.

•Technique of breast feeding:-

1- Both hands and nipple should be clean.

2- Baby should be , warm ; not wet.

3- Mother relaxed (sitting or lying on her side).

4- Support of the breast during feeding.

Criteria of good position:-

1- infant body is close to the mother.

2- infant body is turned to the mother.

3- infant whole body is supported (not only head or neck).

4- infant neck is straight or bent slightly back.

5- how to carry and protect (as above).

6- Rooting reflex : by touching the baby cheek or lower lip with the nipple.

7- when mouth is open the nipple or lower part of the areola are pushed well back in the infant's mouth against it's palate ; so that hard palate compress and massage the milk senuses which lie beneath the areola.

8- mother should be shown how to attach her baby to the breast:-

The 4 criteria of good attachment:

1)) infant chain is touching the breast.

2)) infant mouth is widely open.

3)) lower lip is turned outwards.

4)) more aleady tissue above than below the mouth.

9- Baby's face must not be buried in the breast (interfere with nasal breathing).

10- Continue feeding till baby releases nipple.

11- Mouth especially corners are wiped.

12- Baby is held vertically and tapped gently 2-3 times on the back to drive any swallowed air.

13- Baby placed in bed either lying on its right side or prone.

I) Criteria for Adequate Breast feeding :-

1) Baby feeds at least 8 times \ 24 hrs.

2) Baby is calm satisfied after feeds.

3) Baby sleeps well 2-4 hours after nuring.

4) Normal motion no constipation.

Stools are semiformed ; must asd yellow in color soft to semiliquid : fermentive odor ; alid neation frequency one motion after each feed to one motion every 2-3 days.

5) Normal amount of urine :- 6 or more / 24 hours.

6) Normal weight gain (20-30 gm/ day or 150-210 gm / week Can be assessed by :-

a) Wt. charls.
b) Test weighing :-
infant is weighed at 4 days internal :-

1) at a fixed times of the day
2)under same circumstances ; same clothes ; before feeding
*** If the weight gain is 100 gm or more than amount of breast feeding is adequate.**

II) Criteria of under feeding in breast – fed infants :-

1) Wt gain ; slow , irregular or statiorary fallowed by weight most consistent evidence.

2) Decreased amount of urine.

3) Crying unsatisfied after emptying both breasts.

4) Suckling of fists between the feeds.

5) Stays in breast for a long period > 30 min.

6) Sleeplessness or v. short sleep.

7) Air swalloweing collics, vomiting, hunger stools.

8) constipation or hunger stool (frequent, small, green color).

3) Criteria of overfeeding in breast – fed infant :-

1) Frequent regurgitation , vomiting collics.

2) Large bulky stools undigested curds.

3) Abdomined distesion colics.

4) Skin eruption sore buttorks.

5) Polyuria.

6) Excessive sweating at head.

7) Baby overweight.

Management :-

a)nursing at regular intewals. (4 hrly)

b) small amount of boiled water levere feeds.

c) Eliminate excess matemal diet.

d) Removal of excess breast milk manually.

Contraindication for breast feeding

Absolute contraindications	Temporary contraindication
I)Infant causes :- a) lnlon errors of metalism: e galactosemia phomylkelonusia. b) Inhorn evor of digestion:- monosacchaiden disaccha desintaleance. II) Maternal causes :- a) Maternal hepatitis B. b) Maternal H/V/A/DS. c) Intahe of dengurous dugs cocaive Anticoagulaous, Radioactive suhrt. * Antireoplasties :- cyclaphasphnide metlahexate ; cyclasperine. * Thiouainl ; ergataoine ; lithium ; bomoiritive. * chloranphinical ; tetracycline ; flagyle qunolone botten avoided.	I) Iihant causes :- 1) severe cleft palate ; nicagnetlion. 2) Oral herpes simplex. II) Maternal causes :- 1) Insanity ; psyclasis ; epilis. 2) mat infectioans :- a) lepes simplex an the breast. b) chicken fax. c) Active T.B baly honld seuive INH vtested lwlraeculiom test if ue after um discatisive INH. d) Breast alisen. e) Septicemine , sepsis , poneunoin typhoid fever.

Temp contraindication :-

3) Eclanpsia

4) Delilty :- malign cardiac dis severe malnutrition.

5) Underdeveloped heasts or severly invented nipples.

6) Pregnency :-

not contraindication
it's wise to stop lact. After 5th month of peg. Because mother can 4 afford the confined rutivints to the fetus.

Humanytion of Cow's milk :-

50 ml milk boiling constant steaving to breek down large fat globules + 50 ml boiled water gradually inceases milk water ratio.