

Preventive pediatrics

It aims to minimize morbidity and mortality of infancy and childhood which may occur due to :-

1-Prenatal causes

e.g diseases of the mother(cardiac,renal diseases,inadiation,drugs,...etc) or diseases of the father as chromosomal abnormalities.

2-Perinatal causes

e.g asphyxia,birth trauma. Congenital anomalies & infections.

3- Post natal causes

e.g infections,accidents,...etc

Immunity

It may be active or passive. Each of them may be natural or aquired.

1-Active immunity

antibodies are formed by the body.

A-Natural type:Through infections.

B- Aquired type:Through vaccination.

2- Passive immunity

antibodies are given in a ready manner either natural or acquired.

Natural passive: through placenta or milk (from the mother).

Acquired passive: through serum administration.

Vaccination schedule

1) In the first 40 days: BCG against T.B(0.1 ml intradermal in the left shoulder).

2)In the 2 – 4 - 6 months.

Polio(2 drops on the tongue)DPT (diphtheria,pertussis, and tetanus)0.5 ml subcutaneous and hepatitis B vaccine.

3) In the 9month:

Measles vaccine(0.5ml subcutaneous).

4- From the 18to the 24 month:

Booster dose from polio,DPT.

5-BCG: is repeated every 6 years if tuberculin test is negative.

Growth & developement

Definition

Growth: Means increase in weight and size.

Development: Means maturation of function and acquiring more skills.

Factors of affecting growth and development: -

- 1-Genetic factors
- 2-Endocrinal factors
- 3-Environmental factors
- 4-Nutritional factor
- 5-Activity&exersizes
- 6-Diseases

Stages of growth&development

- 1-Prenatal stage
- 2-Perinatal stage
- 3-Neonatal stage
- 4-Infancy(from 1m-years)
- 5-Preschool stage(3-6y)
- 6-School stage(6-12y)
- 7-Puberty stage

Evaluation of growth:

By measuring:

head circumference, length, hight, weightchest&abdomen circumference teeth eruptions
forexample:-

- 1) **At birth:-** length is about 50cmweight is about 3-3.5 kg head circumference about 35cm.

2)At 1year of age length is about 75cm, weight,is about 10kg head circumference is about 47cm.

3)At 4years height is about 100cm, weight is about 16 kg & head circumference 50cm.

Evaluation of development:-

A-Motor:

Head support at 3 months,sitting at 6m,walking at10-18m.

B- Mental:

At one year of age baby can say two words at 2 years can say sentence from two words,socailsmile at 2moths.

Developmental history

1) Physical....teeth eruption

- Central incisor.....6M
- Lateral incisor.....9M
- 1st molar.....12M
- Canine.....18M
- 2nd molar.....24M

2) Motor

- Neck support.....3M
- Sitting with support.....4M
- Sitting without support.....6M
- Crawling.....9M
- Standing.....10M
- Walking with support.....12M
- Walking without support...15M
- Ascends stairs.....18M
- Descends stairs.....24M

3) Mental

- Social smile.....2M
- Laughs.....4M
- Recognize & prefer mother.....6M
- Responds to own name & say mama-dada.....9M
- Waves (bye-bye).....12M
- Say 2 words.....12M

- Say 10 words.....18M
- Say 100 words & 3 words sentence.....24M

WT

- Birth → 3:3.5 Kg
- 5 M → double birth WT
- 1 year → triple birth WT
- 2 years → 4 times birth WT

HC:

- 35 cm → at birth
- 43 cm → at 6M
- 47 cm → at 1 year
- 49 cm → at 2 year
- 51 cm → at 6 year
- 53 cm → at 12 year

H&L

- At birth → 50 cm
- 1 year → 75 cm
- 4 years → 100 cm

Normal range for RR, HR and BP

ITEMS	RR	HR	BP
newborns	40 (35-45)	120 (90-150)	80/50
Infants	30 (25-35)	110 (80-140)	80/50
Young child	25 (20-30)	100 (80-120)	85/55
Old child	20 (15-25)	80 (70-110)	90/55

Neonatal infant

Infant in the first month of life called neonate.

☞ **Feature of neonate:-**

- ◆ Head is relatively larger & limbs shorter, pink skin covered by vernix caseosa & lanugo hair, weight 2-4.500 kg.
- ◆ Length 45-55cm respiratory rate 35-50 /mint.
- ◆ Sleeps 20-22 hours per day pulse 120-160/mint.

Neonatal reflexes e.g

Moro reflex: Sudden flexion of all limbs with sudden jerking the baby, also moving the head on touching cheeks searching for mother breast.

Neonate passes meconium (black stools) in the first 24 hours (maximum 36 hours).

Birth injuries:-

1- Head injuries e.g

A-Cephalhematoma: (limited to one skull bone)

B-Caput:- Collection of subcutaneous fluid (diffuse on more than one bone).

C- Intracranial haemorrhage: Manifested by absence of neonatal reflexes, sleepiness convulsions.

2- Vertebral injuries: Which may lead to paralysis on one limb (e.g. Erb's palsy) due to traction on head or shoulder—or the four limbs.

3- Internal organs injuries e.g.: Rupture liver or spleen on internal haemorrhage.

4- Fractures e.g.: Fracture clavicle or limb bones.

Neonatal respiratory diseases

Neonatal asphyxia

Causes

a- Prenatal causes:

e.g.: Maternal hypotension, premature placental separation, pre-eclampsia.

b- Perinatal causes:

e.g.: Anemia, shock, drugs, or respiratory diseases (hyaline membrane disease).

Manifestation:

cyanosis or pallor, respiratory rate may be increased or decreased.

Treatment:-

- Clearing airways by suction
- oxygen and artificial respiration.

Neonatal pneumonia

Definition

It is inflammation of lung tissues.

Causes

Infection from birth canal or from attendants.

Manifestation

- Fast breathing (more than 60 minutes)
- Cyanosis, fever or hypothermia

Treatment

1- Oxygen

2- I.V fluids

3- Antibiotics

Ampicillin: 50-100mg/kg I.V »»»»» every 12 hours

Gentamicin: 3mg /kg I.V »»»»» every 12 hours

NB » in severe cases **Gentamicin** substituted with another more potent aminoglycoside (**Amikacin**) and a third generation cephalosporin (**cefotaxime**)
» Imipenem (Tienam) in very critical cases

Hyaline membrane disease

It occurs in prematures, infants of diabetic mothers and infants born by C.S.

Manifestations: Respiratory distress, cyanosis.

Treatment:

- 1- Oxygen
- 2- I.V fluids
- 3- Antibiotics: (as in Neonatal pneumonia)
- 4- Surfactant 5mg/kg dose may be repeated after 12 hours if the response is inadequate.

Neonatal circulatory diseases

Anemia:-

Causes: Hemolysis, bleeding from the cord or injuries or hemorrhagic disease of the newly born.

Manifestation: Pallor, tachycardia, respiratory distress.

Treatment:

- 1- Blood transfusion
- 2- exchange transfusion
- 3- vitamin k in cases of hemorrhagic disease of the newborn.

Digestive system

Vomiting

Causes

- Irregular feeding.
- Aspiration of amniotic fluid.
- Increased intracranial pressure.
- Gastro – intestinal congenital anomalies.
- Gastroesophageal reflux

Treatment of Gastroesophageal reflux

1- Eructation

2- Thickened formula (Cerelac rice)

3- Drugs:

- **Antiemetics:** metoclopramide 0.5 mg/kg/day/TDS (oral)
- **Antiacid:** mucogel 2ml before each feed

4- surgery

Diarrhea

It may be physiological(with every diet) or due to irregular feeding or infection(gastroenteritis).

Constipation

Absence of meconium excretion for 36 hours.

Causes

- Intestinal obstruction.
- Constipation later on, may due to decreased breast milk.
- Hypothyroidism.
- Megacolon.

Dehydration fever:- due to decreased fluid intake .

Jaundice

May be physiological (occurs in the 2, 3 days, bilirubin not more than 15 mg% and duration not more than 15 days).

Other causes RH incompatibility (occurs in the 1st day).

Septicemia (3 – 7 days) or hepatitis (any age).

Treatment:

- 1- Exchange transfusion:** (cord bilirubin above 5 mg/dl or Hb below 10 gm or rapid rise of serum bilirubin more than 1 mg/hour)
- 2- Phototherapy:** bilirubin above 15 mg/dl
- 3- Phenobarbital:** 6 mg/kg/day
- 4- TTT of the cause**

Nutrition

Evry body requires
Proteins (to build up tissues)
Fat& carbohydrates (to give energy)
Vitamins& minerals (to protect & regulate system functions) beside water .

Deficiency of these materials causes many diseases.

Kwashiorkor:

Caused by deficiency of proteins.

Manifestations

Constant manifestations

- Edema
- Apathy
- Growth retardation
- Dcrease muscle fat ratio

Variable Manifestations

- Hair changes
- Skin changes
- Anemia
- Vitamin deficiency
- Recurrent infections is common .

Treatment

- Small frequent balanced diet (cerelac, vegetable soup with minced chicken and eggs – cheese – broad beans....)
- Treatment of infections
- Vitamins
- Iron supplementation (iron 2-6 mg/kg/day)

Marasmus

It occurs due to decreased intake of both proteins and calories.

Manifestation:

Growth retardation.

loss of weight and recurrent infections.

loss of subcutaneous fat according to site of fat loss
classified into:-

- 1st degree: Abdominal wall
- 2nd degree: Buttocks & thighs
- 3rd degree: Generalized and involve face (senile facies).

Treatment

- Small frequent balanced diet (milk – yogurt – cereals- fruits - vegetable soup with minced chicken and eggs)
- Volume of the prescribed milk should equal 200 ml/kg/day then increased gradually

RICKETS

It is a disease affecting bone and muscles (defective mineralization of bones)

Causes:-

- 1- Vitamin D deficiency (decreased exposure to sun or prolonged breast feeding).
- 2- Defective metabolism of vit. D (e.g in liver and kidney diseases).
- 3- Defective receptors of vit .D in the body.

Manifestations

Early manifestation :-

- Irritability - Excessive sweating
- Delayed teething - Standing -

Anorexia

late manifestations:-

A) Increased head size (macrocephaly), wide anterior fontanelle.

B)Chest: rosary beads & harison sulcus(transverse depression in the chest).

C) limbs:Enlargement of lower end of forearms& legs marfan sign(transverse depression below medial maleolus)& bow legs.

D) Pelvic abnormalities.

E) Muscles & joints:Weakness leading to abdominal distension, kyphosis,...etc.

Treatment:

- Diet rich in vit D as egg yolk
- sun exposure.
- vit.D therapy: Vit.D2 or D3 oral (3000 – 5000 I.U/day for 3-4 weeks (DecalB12-calcical syrup 1000I.U/5ml), alternative asingle I.M of Vit.D2 or D3 (devarol amp.,600.000I.U/ml) healing start after 2weeks (**healing rickets**), complete after 4weeks (**healed rickets**)
- **Iron and calcium supplementation**
Iron:(6 mg/kg /day for 8 weeks)

calcium supplementation: is not necessary in mild & cases moderate , but in sever cases with hypocalcemia or complicated with tetany oral calcium (40 mg/kg/day for 2weeks) (Calcium sandoz syrup, 110 mg /5ml)

- **TTT of complication:** tetany TTT by **I.V** calcium gluconate 10% (100 mg/kg) slowly over 5-10 minutes and monitring heart rate is ecessary, after control of the attack oral Vit.D &calcium therapy



Iron deficiency anemia

Causes:-

- 1- Decreased iron intake.
- 2- Defective metabolism& absorption.
- 3- Blood loss.

Manifestations:

Pallor, easy fatiguability and hepatosplenomegaly in some case.

Treatment:

1- Iron therapy :

- **Oral:**(6 mg/kg /day for 2- 3 months) divided into 2-3 doses between meals
- **I.M:**iron dextran (iron dextran amp.,250 mg/5ml)
Doses 4mg/kg /dose deep I.M every other day for 3-4 doses
- **I.V:** in sever cases (Ferosac I.V amp., 100 mg/5ml)

2- Packed red cell transfusion:in sever caseswhen HB(below 5gm/dl.)

3- TTT of the cause:(parasites as ankylostoma – chronic diarrhea)

Infectious Diseases

1-Diphtheria:

It is a disease affecting pharynx, larynx & some times nose & eye caused by gram+ ve bacilli producing toxins.

Transmission: by droplet infection

Clinical manifestations: low grade fever severe tachycardia & exhaustion, dysphagia & hoarseness of voice, cervical lymphadenopathy with the presence of unilateral grayish membrane on tonsils.

Complications:

- 1-Respiratory system : Pneumonia, respiratory obstruction.
- 2-Cardiovascular: Heart failure.
- 3-Kidney : Nephritis 10% of cases.
- 4-Nervous system: Paralysis in different muscles eg limbs, pharyngeal-laryngeal area or eye muscles.

Prevention: DPT vaccine

Treatment:

- 1- **Bed rest.**
- 2- **Care for respiration & feeding.**

3- **Antidiphtheritic serum:** (50.000 – 100.000 unit)are given I.V adrenaline should be available for possible allergic reaction

4- **Eradication of the organism by antibiotics:**

Procaine Penicillin (400.000 I.U, I.M once daily)

Erythromycin (50 mg/kg/day, oral. in 4 divided doses)

Amoxycillin (50 mg/kg/day, oral. in 4 divided doses)

duration of therapy is 10 days

5- **TTT of complication**

6- **vaccination after recovery**

