NEONATOLOGY

part 1

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Definitions :

- **Neonatal period defines as < 28 days of life , subdivided into ;**
- Period i : birth < 24hr
- Period ii : 24hr - < 7 days
- Period iii : 7 days - < 28 days .
- **Assessment need for resuscitation : Apgar score 1,5 & 10 -20 min after delivery .**

- **Rapid visual assessment of gestational age :**
- 1 – Creases in soles of feet .
- 2 – Breast nodules .
- 3 – Ear lobe .
- 4 – Skin & scalp hair .
- 5 –genitalia
  At time of birth ,3Q need to be asked
  Term,breath or crying,muscle tone

- **Physical examination :**
- 1 – Temperature , HR (120-160) , RR (40-60) , BP 80/50 .
- 2 – HC; 35cm , length;50 cm , Wt; 3-3.5 kg gestational age[time elapsed beteween 1^{st} day of last mens period and day of delivery] .
- 3 – General appearance ;

- **Color :**
- Plethora
- Jaundice
- Pallor
- Cyanosis (central ,peripheral ,acrocynosis)
- Mottling (lacy red appearance) in cold & sepsis
- Persistent mottling – cutis marmorata e.g ; Down's syndrome .

- **Rash :**
- Milia – sebaceous retention : disappear with few weeks .
- Erythema toxicum – red skin with yellow-white papule in center.
- Candida Albicans – Erythematous plagues with sharply demarcated edge , stellate body - skin fold are involved .

- **Nevi :**
- Macular hemangioma (stroke bites) ; macular hemangioma seen on occipital , eyelids and glabella .disappear within few years .
- Port-wine stain – at birth ; not bleach with pressure , doesn’t disappear with time .Sturge-weber syndrome must be ruled out .
- Cavernous hemangioma – resembling cyst anywhere , red ill-defined mass , most regress with time .
- Strawberry – bright red sharply demarcated , mostly on the face , 70% regress at 7 years .

- **Head :**
- Molding ; temporary asymmetry of skull result from the birth process .normal shape within 1st week .
- Caput succedaneum ; diffuse edema of soft tissue which extended a cross suture line .It resolved within several days .
- Cephalhematoma ; sub-periosteal hemorrhage that never extend the suture line .Resolved within 6 wks .

- ↑ ICP secondary to hydrocephalus , following can be seen : plugging fontanel , separated sutures , Setting Sun sign; a prominent veins in the scalp .
- Craniosynostosis ; is premature closure of one or more suture .

- **Neck :mass**
- **Face :dysmorphic feature**
- **Ears :abnormaleties**
- **Eyes – check red reflex , brush field , sub conjunctival hemorrhage ,conjunctivitis .**
- **Mouth :**
- Ranula – cystic swelling in floor of mouth
- Epstein pearls –cyst with keratin .
- Mucocele
- Natal teeth
- Macroglossia – Beekwith's or pompes disease or hypothyroidisms .
- Frothy saliva – oesophageal atresia or fistula.
- Thrush white colour mucous membran

- **Chest :deformity**
- **Abdomen:**
- Omphalocele→ umbilical ring[covered] .
- Gastroschisis –anterior abdominal wall.
- Meconium pass within 48hrs ;urine passed with in 24 hrs.

- **Extremities**
- **Hip :** Barlow's sign , ortolani's .
- **CNS :**
- Hypotonia , hypertonia ,
- Premitive reflexes :rooting, grasp, moro ,stepping , tonic neck reflex .
- Cranial nerves
- Erb-Duchene ; paralysis of 5th & 6th cervical nerves (waiter tip position)>> peripheral nerves .
- Klumpkes : 7th &8th cervical nerves (hand is flaccid)

Pre-maturity

- **live born infants delivered before 37 weeks from the first day of LMP.**
- LBWT = < 2500 g
- VLBWT = < 1500 g
- Extreme LBWT = < 1000 g

- **Assessment of gestational age at birth ;**
- 1 – New Ballrand score (physical criteria) ; scoring -1 , 0,1,2,3,4,5 . signs ; skin , lanugo , planter surfaces , breasts , eye , ears , genitals male or female .
- 2 – Neuromuscular criteria for maturity ; scoring -1 , 0,1,2,3,4,5 . signs ; posture , squar window (wrist) , arm recoil , popliteal angle , scarf sign , heel to ear .

- **3 – Rapid visual assessment ;**
- A – Creases of sole of foot .
- B – Size of breast nodule .
- C – Nature of hair & skin .
- D – Ear lobe .
- E – Genitlia . [COMPLICATION]
  early ;RDS,JAUNDICE,IVH,ANAEMIA[HOSPITAL]
  LATE;ROP,CLD,ANAEMIA,RICKETS,CNS DAMAGE.

- 4 – Direct ophthalmoscopy ; depending on vessels covering the lens .
- Grade 4 ; 27-28 Wk , Grade 3 ; 29-30 Wk , Grade 2 ; 31-32 Wk. Grade 1 ; 33-34 Wk.

Causes of pre-maturity :

- 1 – Fetal causes : fetal distress , multiple gestation , erythroblastosis , non-immune hydrops .
- 2 – Placental : placental dysfunction , placenta previa , abruptio placenta .
- 3 – Uterine : bicornate uterus , incompetent cervix .
- 4 – Maternal : pre-eclampsia , chronic medical illness(cyanotic heart disease , renal diseases) , malnutrition , infections (L.monocytogens , UTI , group B streptococci , bacterial vaginosis , chorioamnionitis) , drug abuse (cocaine) , smoking .
- 5 – Others : premature rupture of membrane , polyhydraminos , iatrogenic .

- **Problems associated with prematurity :**
- Respiratory : RDS (HMD =hyaline membrane disease) , BpD (broncho-pulmonary dysplasia) , apnea , congenital pneumonia , pulmonary hemorrhage & hypoplasia , pneumothorax .
- CVS : PDA , bradycardia (apnea) congenital malformation , hypotension , hypertension .

- **Hematologic :** anemia , hyperbilirubinemia , DIC , vitamin K deficiency , hydrops , hemorrhage (liver , cutaneous ,adrenal).
- **Gastrointestinal :** poor motility , necrotizing enterocolitis .
- **Metabolic :** hypocalcemia , hypoglycemia or hyperglycemia , hypothermia .
- **CNS :** IVH , hypoxic ischemic encephalopathy , retinopathy of prematurity , hypotonia , kernicterus , deafness .
- **Renal :** ↓Na , ↑Na , ↓K , RTA , edema .
- **Others :** infections (congenital , perinatal , nosocomial).

SGA - IUGR

- SGA= small for gestational age .
- IUGR = intra-uterine growth retardation .
- SGA= IUGR for their gestational age which grow below 10th centile for wt.
- Symmetrical: small baby, causes started early < 25 weeks gestation → small Ht , Wt , Head circumference .
- Asymmetrical : Low lenght and Wt with sparing head growth , started late > 24 wk gestation .
- Low birth weight solely to short gestational period would of course indicate prematurity ,LBWN could be preterm,SGA or both.
- 28weeks=1.1 Kgm , 32weeks=1.5 Kgm , 34weeks=2.2Kgm. , 36weeks=2.5Kgm .

Causes of SGA :

- 1 – Fetal ; chronic disorders , chronic infection , congenital anomalies , radiation , multiple gestation , pancreatic aplasia .
- 2 – Placental : ↓ placental weight or cellularity , ↓ surface area , villous placentitis , infarction , tumor (hyditiform mole) , placental separation , Twin-transfusion syndrome .
- 3 – Maternal : toxemia , hypertensive or renal disease , hypoxemia (cardiac or pulmonary disease) , malnutrition , chronic illness SICKLE CELL ANEMIA , drugs (narcotics , alcohol , cigarettes , cocaine , antimetabolites).

-Problems of SGA

Problems	pathogenesis
Intra-uterine fetal demise	hypoxia , acidosis , infections , lethal anomaly .
Perinatal asphyxia	↓uteroplacental perfusion during labour +/- chronic fetal hypoxia-acidosis , meconium aspiration .
Hypoglycemia	↓tissue glycogen store , ↓gluconeogenesis, hyperinsulinism ↑ glucose need for hypoxia , hypothermia , large brain .
Polycythemia –hyper viscosity	fetal hypoxia → ↑ erythropoietin.
Reduce oxygen consumption /hypothermia	: hypoxia , hypoglycemia , starvation effect , poor sub-cutaneous fat stores.
Dys-morphology	syndrome anomalads , chromosomal genetic disor--ers , oligohydramnios –induced deformation , Torch infection .