Medical problems during pregnancy associated with fetal or neonatal risk

1) Cyanotic heart diseases: lead to intrauterine growth retardation, due to low fetal oxygen delivery.
2) Diabetes mellitus: if mild it will cause large for gestational age baby due to hyperinsulinemia during fetal life which lead to fetal overgrowth, but if severe it will cause growth retardation due to placental insufficiency.
3) Drug addiction: Intrauterine growth retardation and neonatal withdrawal, this is due to direct drug effect, plus poor diet.
4) Endemic goiter: lead to congenital hypothyroidism, due to iodine deficiency.
5) Graves disease: lead to transient thyrotoxicosis due to placental immunoglobuline passage of thyrotropin receptor antibody.
6) Hypertension: cause intrauterine growth retardation due to placental insufficiency.
7) Idiopathic thrombocytopenia: lead to neonatal thrombocytopenia, due to nonspecific platelet antibodies cross placenta.
8) Rh or other blood group sensitization: lead to fetal anemia, hypoalbuminemia, hydrops, and neonatal jaundice due to antibodies cross placenta directed at fetal cell with antigen.
9) Systemic lupus erythematosus (SLE): may lead to heart block, rash, anemia and thrombocytopenia due to Ab directed at neonatal heart, WBC, platelets.

Birth injuries

Refer to both avoidable and unavoidable injuries to the fetus during the birth process like traumatic injuries due to mechanical forces applied to the infant during parturition or others like birth asphyxia.

Traumatic birth injuries like: -

Cephalhematoma: ...........
Caput succedaneum: .......
Retinal and subconjunctival hemorrhage: -

Are common but usually are small and insignificant, requiring no treatment.

Spinal cord or spine injuries: -

May occur in fetus from hyperextended posture, and in infants following excessive rotational (at C3-4) or longitudinal (at C7-T1) force transmitted to the neck during vertex or breach delivery. Fractures of the vertebrae are rare and may cause direct damage to the spinal cord that result in transection and permanent sequelae or hemorrhage, edema and neurologic signs.

Brachial plexus injuries may result from excessive traction on the neck, producing paresis or complete paralysis, depending on the nerve roots involved. Erb-Duchenne paralysis involve the 5th and 6th cervical nerves, the infant can not abduct the arm at the shoulder, externally rotate the arm, or supinate the forearm. The usual picture is one of the painless adduction, internal rotation of the arm and pronation of the forearm, there is absent Moro reflex on the involved side, but the hand grasp is intact.
Phrenic nerve palsy (C3,4and 5) may result in diaphragmatic paralysis and respiratory distress.

Klumpke paralysis is due to injury to the 7th and 8th cervical nerves and the 1st thoracic nerve resulting in paralyzed hand, and if the symptomatic nerves are injured, so ipsilateral Horner Syndrome (presented with ptosis and miosis).

Facial nerve injury may be due to compression of the 7th cranial nerve between the facial bone and the mother’s pelvic bones or the physician’s forceps. It is characterized by asymmetric crying face whose normal side, the affected side is flaccid, the eye will not close, the nasolabial fold is absent, and the side of the mouth droops at rest.

Fractures: fractures of the cranium are rare and usually linear, and require no treatment, depressed fractures of the skull are unusual but may be seen with complicated forceps delivery, while fractures of the clavicle usually unilateral and are noted in macrosomic infants following shoulder dystonia. Fracture of the extremity are less common than those of the clavicle and involve the humerus more than the femur.

Visceral traumas: trauma to the liver, spleen or adrenal gland is noted in macrosomic infants and in very premature infants with or without breech or vaginal delivery, like subcapsular hematoma in the liver (which result in anemia, hypovolemia, and shock).

Common Congenital Anomalies

1) Choanal atresia: manifested as respiratory distress in delivery room, apnea, unable to pass nasogastric tube through nares.

2) Diaphragmatic hernia: presented as scaphoid abdomen, bowel sounds present in chest and respiratory distress.

3) Tracheoesophageal fistula: there will be a history of polyhydramnios in the mother during pregnancy, in addition to aspiration pneumonia, excessive salivation and unable to place N-G tube in stomach.

4) Intestinal obstruction: may be in form of volvulus, duodenal atresia, ileal atresia. The neonate presented with bile stained vomiting and abdominal distension, in addition to a history of polyhydramnios in the mother during pregnancy.

5) Gastroschisis/omphalocele: history of polyhydramnios in addition to the features of intestinal obstruction in the neonate.

6) Renal agenesis like Potter syndrome: there is history of oligohydramnios in the mother during pregnancy in addition to anuria, pulmonary hypoplasia and pneumothorax in the neonate.

7) Hydronephrosis: presented as abdominal mass.

8) Neural tube defect: there will be a history of polyhydramnios in the mother, elevated alpha feto protein and decrease fetal activity.

9) Syndromes like Down syndrome.

Neonatal Emergencies

Cyanosis

Cyanosis: is a bluish discoloration of the skin and mucous membrane that is directly related to the absolute concentration of the unoxygenated or reduced haemoglobin (more than 3gm/dl of reduced Hgb in arterial blood or more than 5 gm/dl in capillary blood).
Acrocyanosis: it is bluish discoloration of the hands and feet with pink color of the rest of the body. It is common in the delivery room and of no clinical concern, and it is more common in cold weather.

Central cyanosis: of the face, trunk, mucosal membranes, and the tongue can occur in the delivery room or at any time after birth and is always a manifestation of a serious underlying condition.

Etiology:

There are many etiologies including respiratory pathologies, cardiac pathologies like cyanotic congenital heart diseases (ST: TOF, TGA, TA, Tric Atrias, Total an pulmonary). Other like CNS problems (like IVH), haematological disorders (like polycythemia) and metabolic disorders (like hypoglycemia).

Differential Diagnosis of neonatal cyanosis:

1) Pulmonary: RDS, sepsis, pneumonia, meconium aspiration pneumonia, persistent fetal circulation, transient tachypnea.
2) CVS: cyanotic congenital heart diseases, heart failure.
3) Central nervous system: maternal sedative drugs, asphyxia, intracranial hemorrhage, neuromuscular diseases.
4) Hematologic: acute blood loss, chronic blood loss, polycythemia, methemoglobinemia.
5) Metabolic: like hypoglycemia, adrenogenital syndrome.

Evaluation:

1- initial steps: evaluation includes a detailed history and physical examination, serum electrolytes with serum glucose, arterial blood gas analysis (ABG), CBC, and chest radiograph.

2- 100% oxygen test: ABG is performed after administration of 100% oxygen. The 100% oxygen test helps evaluate whether cyanosis is caused by cardiac or respiratory disease.

Management:

Immediate treatment of cyanosis may be necessary and often includes administration of oxygen and rapid correction of abnormalities of temp, hematocrit, glucose and calcium levels. In severely cyanotic infants, intubations and mechanical ventilation may be necessary until a final diagnosis is made and definitive treatment is initiated.