

## Neonatal Jaundice

Over 60% of all newborn infants become visibly jaundice because :

1. The Hb conc. Falls rapidly in the first few days after birth from hemolysis( 1 g of Hb yields 640umol{ 35mg} of bilirubin ) .
2. The red cell life span of newborn infants (70days ) is markedly shorter than that of adults (120days ) .
3. Hepatic bilirubin metabolism is less efficient in the first few days of life .

Breakdown of Hb ---- unconjugated bilirubin(bound to albumin)

-----In Liver(conjugation=glucuronyl transferase)---

conj.bilirubin---In intestine ----stercobilinogen

from intestine(reabsorption is increased if milk intake is low) to liver= Enterohepatic circulation

To kidney ----urobilinogen

**Causes of neonatal jaundice :**

***a - jaundice starting at <24h of age:***

1. Hemolytic disease( Rh incompatibility; ABO incompatibility; G6PD deficiency; Spherocytosis; PK deficiency)
2. Congenital deficiency .

***b-Jaundice at 24h to 2 weeks of age:***

1. Physiological jaundice.
2. Breast milk jaundice.
3. Infection ( UTI).
4. Hemolysis ( G6PD deficiency, ABO incompatibility ).
5. Bruising.
6. Polycythemia.

7. Crigler najar syndrome.

*c-Jaundice at >2 weeks of age:*

1. *Unconjugated:*

- Physiological or breast milk jaundice.
- Infection.
- Hypothyroidism.
- Hemolytic anemia.
- High gastrointestinalobstruction.

2. *Conjugated:*

- Bile duct obstruction.
- Neonatal hepatitis.

Hemolytic disorder:

*-Rhesus hemolytic disease:*

The birth of severely anemic infant with hydrops and HSM become rare, Antibodies may develop to rhesus antigen other than D and to the kell and Duffy blood group.

*-ABO incompatibility:*

More common>rhesus hemolytic disease, most ABO antibodies are IgM and don't cross the placenta.

Hemolysis is usually <in rhesus disease.

HSM is absent in contrast to rheasus disease.

*-G6PD deficiency:*

Parents of affected infant should be given alist of drugs to be avoided as they may precipitate hemolysis.

*-Spherocytosis:*

The disorder can be identified by recognizing spherocytes on the blood film.

*-Physiological Jaundice :*

Accounts for most babies who become jaundiced durig period of 2 days to 2 weeks.

*-Breast Milk Jaundiced:*

The hyperbilirubinemia is unconjugated and may be prolonged. The cause is unknown.

In some infants the jaundice exacerbated if milk intake is poor.

***-Infection:***

An infected baby may develop an unconjugated hyperbilirubinemia from poor fluid intake, hemolysis, reduced hepatic function, increase in the enterohepatic circulation.

**Jaundice in babies > 2 weeks old called persistent or prolonged neonatal jaundice:**

-Breast milk jaundice is the most common cause, affect 15% of healthy breast-fed infant, the jaundice gradually fades and disappears by 3-4 weeks of age .

-Infection(UTI).

-Congenital hypothyroidism ( Guthrie test ).

**Kernicterus :**

-Bilirubin neurotoxicity ( may occur when the level of unconj. Bilirubin exceeds the albumen-binding capacity of the blood.

-This free bilirubin is fat soluble so it can cross the blood-brain barrier.

- The manifestation include lethargy and poor feeding, in severe cases there is irritability and increased muscle tone( baby may lie with an arched back ( Opisthotonus ).

-Infants who survive may develop choreoathetoid cerebral palsy ( due to damage to the basal ganglia ), learning difficulties and sensorineural deafness.

**Management :**

***-Poor milk intake and dehydration will exacerbate jaundice.***

***-Phototherapy:***

\*Light(wavelength 450nm ) from the blue band of the visible spectrum converts unconjugated bilirubin by photodegradation into a harmless water-soluble pigment.

\*The infant's eyes are covered as a bright light is uncomfortable and has been shown to cause retinal damage.

\*Phototherapy can result in hypo-or hyperthermia, dehydration, a macular rash and diarrhea.

-Exchange transfusion:

\* Exchange transfusion is required if the bilirubin rises to levels which are considered dangerous, particularly if there is associated anemia.

\* Exchange transfusions performed via an umbilical venous catheter by alternately withdrawing 10-20 ml blood and replacing them with donor blood.

\* Twice the infant's blood volume 80 ml/kg is exchanged.

\* Donor blood should be as fresh as possible and screened to exclude CMV, hepatitis B and C and HIV infection.

\* There are no bilirubin levels which are known to be safe or which will definitely cause kernicterus, in rhesus hemolytic disease it was found that kernicterus could be prevented if the bilirubin kept below 20mg/dl.

**Dr. Saeed H. Ali**

**Fach arzt in Pädiatrie**

**Member of EEG society in Germany**