Jaundice

Description

not a diagnosis
Signs

Yellow discolouration
- skin
- gums
- sclera

Sleepiness
Poor feeding
Fever
High pitch cry
Vomiting
Common Problem

60% full term infants

80% preterm infants

Mostly unconjugated hyperbilirubinemia
Jaundice - visible manifestation of hyperbilirubinemia

Hyperbilirubinemia - 2

Jaundice occurs in babies ……..?

- Heme degradation
- RBC shorter lifespan
- Immature bilirubin conjugation
- Enterohepatic circulation
Why worry?

Unconjugated bilirubin is toxic to brain

Kernicterus
Acute bilirubin encephalopathy

Hypotonia
Lethargy
Poor feeding
Irritability/high pitched cry
Fever/apnoea
Hypertonia with arching of neck and trunk, Opisthotonus, Seizures, Coma and death
Babies at Significant Risk of Jaundice

Gestation < 38 weeks
Previous sibling jaundiced
Exclusive breastfeeding
Visible jaundice
Preterm
When to intervene?

Depends on:

- Preterm
- Well or sick
- Timing of jaundice
- Reason for jaundice
Any jaundice visible before 24 hours of age is considered **pathological** and requires urgent management

Begin treatment and investigation simultaneously

Refer immediately to hospital.
Investigations

- Serum bilirubin level (SBR)
- Baby blood group
- Direct antigen test (Coombs)
- Full blood count and film
- CRP
Due to haemolysis until proven otherwise

Rapidly rising SBR levels increase risk of neurotoxicity

Most common causes

1. ABO blood group incompatibility
   - Mother usually O positive
   - Baby usually A positive
   - DAT positive (anti-A antibodies found in babies blood)

2. Rh iso-immunisation
   - Refugee population with previous poor maternal care
Other important causes

- Infection
- RBC disorders *eg* G6PD deficiency, Spherocytosis
- Liver disease
- Inborn errors of metabolism *eg* Galactosemia
- Birth trauma *eg* bruising, cephalhaematoma
Scenario

3 day old baby
37.4 weeks
Birthweight 3 kg
At home, visiting MCHN notes jaundice
Recommends SBR
Additional information
Additional information

60 hours since birth
Current weight  2650 gm  (BW 3000 gm)
Chinese family origin
NVB
Feeding  - breast only, lethargic
Urine output – 3 wet nappies last 24 hours
Stool – dark green, sticky
Jaundiced down to legs
Bilirubinometers

- Screening, hand held device
- Operators must be trained to use
- Use on term infants only
- Accuracy best at lower levels of bilirubin
- Confirm result with SBR if near threshold

*Not to be used*

- Jaundice in infant < 24 hours age
- Significant Risk factors identified
- Previous phototherapy
Treatment threshold graph for babies with neonatal jaundice

Date of Birth: 6/8/14  Time of Birth: 22:00  Direct Antiglobulin: NEG  Baby's blood group: A POS
Mother's Blood Group: O POS  Mother's Antibodies: NEG

Total Serum Bilirubin (micromol/litre)

22 April 2016  MCHN  1 Square = 6 Hours Post Birth
Treatment threshold graph for babies with neonatal jaundice

Date of Birth 6/8/14  Time of Birth 22:00  Direct Antiglobulin NEG  Baby's blood group A Pos
Mother's Blood Group O Pos  Mother's Antibodies NEG

Exchange transfusion
Phototherapy

22 April 2016  MCHN
1 Square = 6 Hours Post Birth
Threshold graphs / Table

- Gestation specific by week
- Threshold levels: birth to 8 days age; 6 hourly intervals
- Phototherapy
- Exchange transfusion

NICE: National Institute of Clinical Excellence UK Consensus Guidelines
Neonatal Jaundice CG 98 [www.nice.org.uk/cg98](http://www.nice.org.uk/cg98)
Phototherapy

Bruce R. Wahl/Beth Israel Deaconess Medical Center

22 April 2016

MCHN
Fibreoptic phototherapy

http://www.newhealthadvisor.com/Phototherapy-for-Jaundice.html
Tell Parents

• Intermittent as effective as continuous
• Breastfeeding continues
• Short breaks for feeds, cuddles, nappy changes are encouraged
• Explain about eye protection
• How phototherapy works
• Side effects
• Long term complications
• What might happen if phototherapy fails
Breastfeeding Jaundice

Not pathological
Exaggerated physiological jaundice

Poor intake
Reduced elimination – urine and bowel
Increased entero-hepatic circulation

Occurs in first 3 – 5 days of life
Not to be confused with Breastmilk Jaundice
Jaundice after 24 hours but less than 10 days

Physiological

- Reflects liver immaturity
- Harmless
- Resolves spontaneously
- No underlying disease
- Baby not unwell

Not Physiological
Warning signs

- One or more significant risk factors
- Unwell
- Poor weight gain
- Lethargic
- Bruising, cephalhaematoma
- Infant of diabetic mother (polycythaemia)
- Few bowel actions, vomiting (GIT obstruction)
- Action: refer for medical evaluation
Breastmilk Jaundice

- Happy, healthy thriving baby
- Prolonged: may appear late and continue for 3 – 12 weeks
- Unconjugated
- Investigations do not identify cause
- Diagnosis of exclusion
- Continue Breastfeeding

Pathophysiology – “inhibitory enzymes” present in breastmilk
Causes Jaundice < 10 days

- Breastfeeding Jaundice / dehydration
- Breastmilk Jaundice
- Haemolysis
- Extravasated blood
- Polycythaemia
- Infection
- Increased entero-hepatic circulation (GIT obstruction)
Prolonged jaundice

Does not resolve by day 14

Must be investigated

SBR: Unconjugated vs Conjugated determines diagnostic pathway
Prolonged Unconjugated Jaundice

Investigation important as specific treatment may be available

- Sepsis eg UTI
- Hypothyroidism
- Inherited liver disease
  - Gilbert’s syndrome
  - Crigler- Najjar Types 1 and 2
Conjugated Hyperbilirubinemia

Suspect when

- Prolonged jaundice
- Skin colour green – brown (not yellow)
- Urine – very dark
- Stools – acholic: pale, lemon coloured
- Unwell baby
- Not thriving
Conjugated bilirubin

Always pathological
SBR reported 120/80 (80 = conjugated)

Possible causes
• Biliary Atresia until proven otherwise
• Bile duct obstruction (Choledochal cyst)
• Hepatitis
• Inborn errors of metabolism
Biliary Atresia

Congenital paucity of bile ducts
  extrahepatic
  intrahepatic

Problem is stasis of bile:
  hepatic encephalopathy
  cholangitis

Medical / Surgical emergency
  Kasai procedure
  Liver transplant
Early follow-up if

- early hospital discharge
- feeding not established
- exclusively breastfeeding
- risk factors identified
Pragmatic Care 2

- Optimise feeding and hydration
- Advise parents of warning signs
- Visit often
Refer early if concerned
• direct to hospital ED if visible jaundice < 24 hrs
• unwell
• signs of conjugated hyperbilirubinemia

Refer to GP
• prolonged jaundice
• not thriving
Resources

Neonatal eHandbook

Links to NICE Threshold graphs

NICE CG 98 www.nice.org.uk/CG98

RCH clinical guidelines: Jaundice

RWH Fact Sheet: Neonatal jaundice