Management of Infant Born to Mother with positive serology for Syphilis

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Congenital Syphilis

- Etiology: Treponema pallidum
  - Extremely fastidious and survive briefly outside the host
  - Cannot be isolated in culture

- Transplacental transmission from infected mother at any time during pregnancy or at birth

- Risk of infection 90% (if mother has untreated **1° or 2°** infection)

- Infection do not result in inflammation changes in fetus until after first trimester and can cause still birth, preterm delivery, hydrops fetalis, IUGR

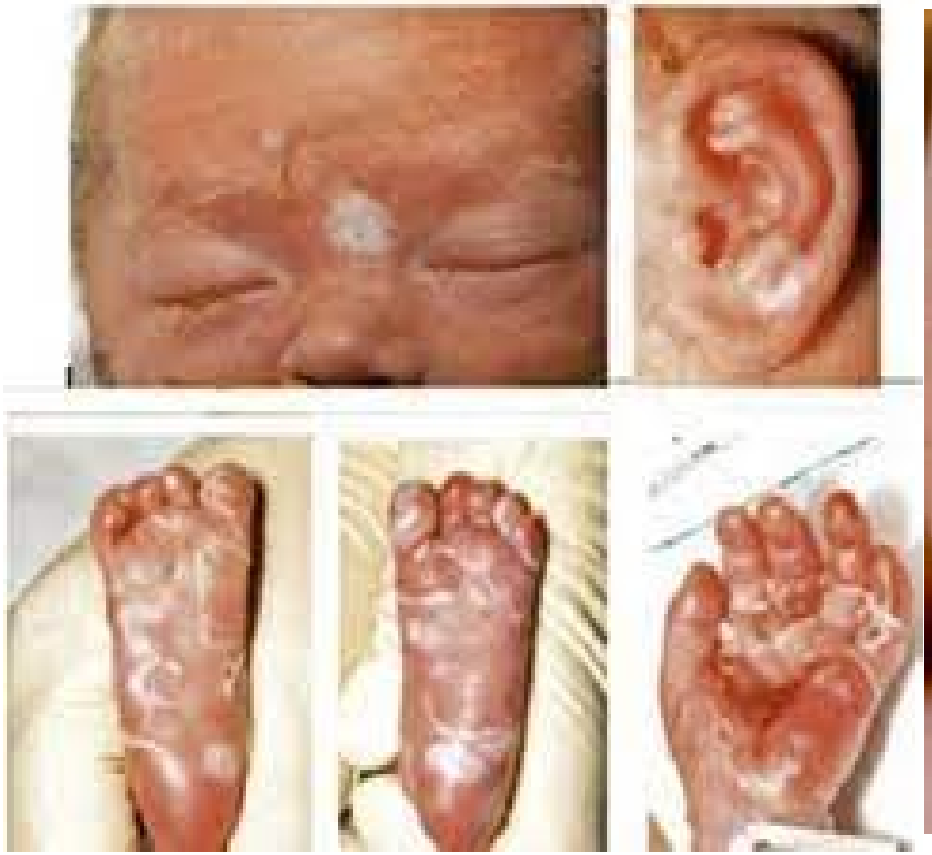
Congenital syphilis

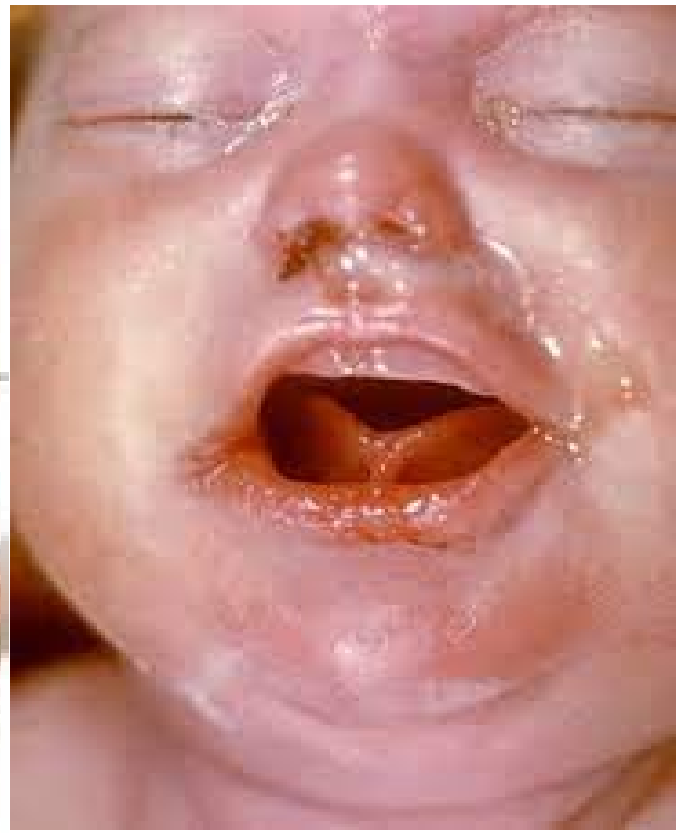
- Risk of infection depend on stage of maternal syphilis and duration of in utero exposure
- Fetal infection results from haematogenous spread
- Fetal infection results in extensive inflammation and multi organ involvement
- The longer a woman has syphilis before pregnancy, the less likelihood for the infant to have congenital syphilis or intrautero death
  - Early stage: almost 100% vertical transmission due to high spirochataemia
  - 4 years after infection: still up to 70% transmission rate
  - Late latent maternal syphilis: most infants unaffected

Early onset Congenital Syphilis

- Dx before or at 2 years
  - 60% appear normal at birth but symptoms develop within 2 months of age
  - Vary and involve multi organs
  - hepatosplenamegaly and abnormal LFT are common
  - others: bullous rash, anaemia, rhinitis (“snuffles”) with highly infectious nasal secretion, osteitis/periostitis (pseudoparalysis) which may involve multiple bones with XR changes
  - Non-immune hydrops, IUGR, jaundice

Early onset Congenital Syphilis





Late onset Congenital Syphilis

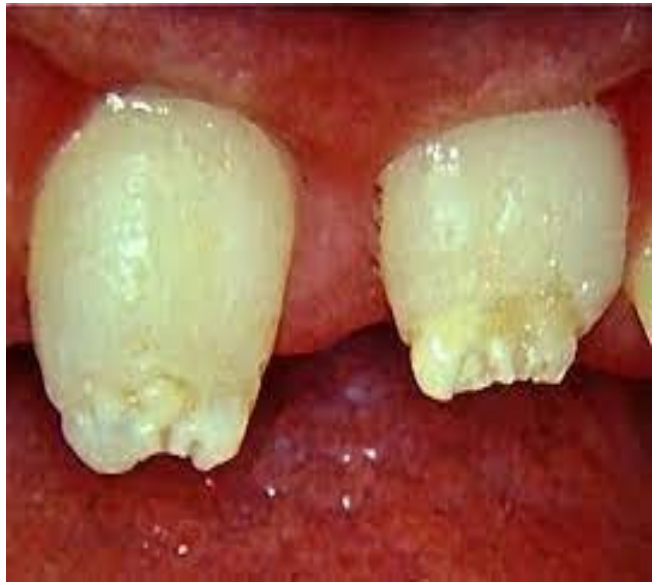
- Results from untreated infection and diagnosed after 2 years of age

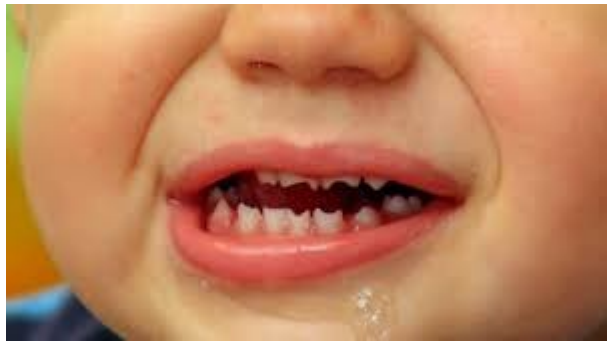
- Hutchinson triad
  1. Hutchinson teeth (notched central incisor)
  2. Sensorineural hearing loss
  3. Interstitial keratitis

- Others: saddles nose, anterior shin bowing, linear scar (rhagades) around the mouth

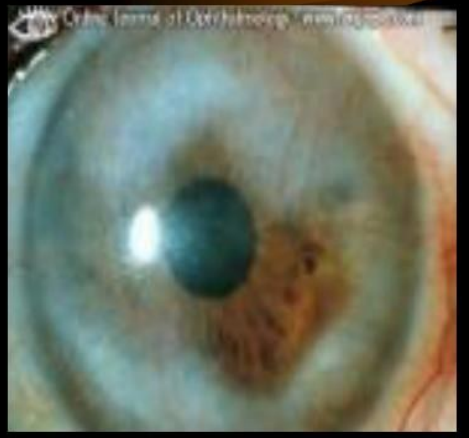
- 60% of infants with Congenital Syphilis have CSF involvement, more likely in maternal secondary or early latent Syphilis

Late onset Congenital Syphilis : Hutchinson triad





- **INTERSTITIAL KERATITIS:** A sign of congenital syphilis.
- **Hutchinson's Triad:** Triad of interstitial keratitis, deafness, and notched teeth is classical evidence for congenital syphilis



Infants born to a mother with positive serologic test (RPR/VDRL and TPPA/TPHA)

Does the baby have congenital syphilis and need treatment ?

Treatment Decision

1. Does the mother have syphilis?

2. Is mother adequately treated?

3. Any clinical, serological or radiological evidence of infection in infants?

4. What are mother and baby's RPR titre at delivery?

Identification of maternal syphilis

- Important for prevention and detection of congenital syphilis
- Routine RPR screening on first trimester visit for all pregnant women, repeat at 28-32 weeks and at delivery (high risk mothers)
- Information on treatment of husband or sexual partner and assess the risk of reinfection
- Screening using cord blood is not reliable
  - May be negative if mother's titre is low or infection during late pregnancy

1. Does the mother have syphilis?

- Serologic test
    1. TPHA/TPAA (Indirect treponemal Ab test)
        -- Specific but remains positive for life even after treatment

    2. VDRL/RPR (Non treponemal test)
        -- Cheap and rapid
        -- Quantitative
        -- Useful for screening, monitoring of disease activity and response to treatment
        -- False negative in early primary disease or latent/late disease
        -- False positive in EBV, SLE and lymphoma

2. Is mother adequately treated?

- mother is treated with appropriate penicillin regime

- Mother is treated more than 1 month before delivery
  (treatment failure can occur IF less than a month)

- Mother's VDRL falls at least 4x after treatment and remains low
  (reinfection can occur/ serofast state)

- Check husband's VDRL and TPHA

Definition of completed treatment in mother

Mother is treated with adequate penicillin regime as per national/local treatment guidelines

1.3 doses (late syphilis/unknown status) of intramuscular benzathine penicillin, given 1 week apart

- If the interval between any of the 2 doses is more than 9 days, the treatment is considered as inadequate.
- Treatment must be penicillin regime

2Treatment must be completed at least 30 days or more prior to delivery with no possibility of reinfection (eg single sexual partner or husband who is not infected

3.Documented at least 4 fold decrease in VDRL/RPR titre after treatment

- May discuss with FMS/dermatologist/ID physician to ascertain mother's treatment status

Mother is considered as ‘not completed treatment’ if one of these criteria is met

- No or inadequate treatment
- Treatment with non-penicillin regime
- Treatment completed less than 30 days before delivery
- No documented 4-fold decrease in VDRL titre
- High likelihood of reinfection

3. Evaluation of infants

- All infants of mothers with positive serologic test MUST be examined thoroughly for signs and symptoms of congenital syphilis.

- VDRL/RPR on infant's serum

- TPHA/TPPA is not necessary

- Consider Xray long bones, CXR and CSF analysis

4. Infant’s vs Mother’s Serologic titre

- Infant’s RPR should be interpreted in comparison with maternal titre
- Infant’s test may be reactive or non-reactive depends on timing of maternal and fetal infection.
- Even after appropriate treatment, maternal Ab can still cross the placenta, resulting in positive test in uninfected infant
- In asymptomatic infants, RPR is only considered significant if 4x or higher than mother’s

  (Both mother and infant sampling at the same time and in the same laboratory)
- Infant with clinical/tissue evidence of disease, any positive RPR strongly support the diagnosis

Guidelines for Interpretation of Maternal and Infant's serologic test

RPR		TPPA		Interpretation
Maternal	Infant	Maternal	Infant	
-	-	-	-	Both mother and infant not infected
+	+	-	-	False +ve mother RPR Passive transfer to infant
+	-	+	+	Maternal syphilis (treated/latent) Possible infant infection
+	+	+	+	Recent/previous maternal syphilis Possible infant infection
-	-	+	+	Mother treated/false positive TPPA Infant unlikely infected

All babies should be treated apart from the following conditions

- Mother is adequately treated with an appropriate Penicillin regime
- Mother is treated for more than 1 month before delivery (treatment failure can occur if < 1 month)
- Mother's antibody titre falls at least 4x after treatment and remains low at delivery
- Baby's physical examination is normal
- Baby's RPR is low and not higher than mother's
- Follow up of untreated cases is assured

Treatment regime for Congenital Syphilis/ Presumed infection

- IV Benzyl penicillin (crystalline penicillin G) 30mg/kg/dose or 50,000U/kg/dose
  - -- BD for first 7 days then TDS for total of 10 days if CSF normal
  - -- BD for first 7 days then TDS for total of 14 days if CSF abnormal

OR

- IM Procaine Penicillin 30mg/kg or 50,000U/kg daily for 10-14 days.

If more than 1 day of therapy is missed, the entire course should be restarted

Mother with positive RPR & TPPA and completed treatment Baby asymptomatic and RPR negative or less than 4x

- No evaluation recommended
- May consider single dose of IM Benzathine penicillin G 50,000U/kg if risk of defaulting follow-up
- Close serology follow up is needed

Mother with positive RPR & TPPA and not completed treatment Baby asymptomatic and RPR negative

- Possible incubating Syphilis
- No evaluation recommended
- May consider single dose of IM Benzathine penicillin G 50,000U/kg if risk of defaulting follow-up
- Close serology follow up is needed; repeat RPR at 3 months

Follow-up

- Careful physical examination

- Serologic test 2-3 monthly until RPR negative or decreases by 4x
  - RPR should decline by 3 months and negative by 6 months if not infected or adequately treated.

- Consider retreatment if
  - Clinical signs and symptoms persist or recur
  - RPR fails to decline or persists or increase after 6-12 months of treatment

- For infant whose initial CSF evaluation is abnormal should undergo a repeat lumbar puncture in 6 months.
  - A reactive CSF VDRL test or abnormal CSF indices that cannot be attributed to other ongoing illness requires retreatment for possible neurosyphilis.
  - If CSF improves, monitor with follow-up serology

Notification of Congenital Syphilis

- Infants with clinical features of syphilis
- Infants whose RPR titre is 4x or higher than that of mother's at delivery

THANK YOU