

Lyme Disease in Pregnancy

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Conflict of interest

My son has chronic Lyme
disease

Infections in pregnancy

- Transplacental infection
- Perinatal infection
- Postpartum infection

Effects of infection on the baby

- Prematurity
- IUGR
- Developmental anomalies
- Congenital Disease

Congenital infections

<u>Viruses</u>	<u>Bacteria</u>	<u>Parasites</u>
Rubella	Syphilis	Toxoplasmosis
CMV	Tuberculosis	Plasmodium sp
VZV	Listeria	
HIV	Borrelia???	
Parvo B19		

Syphilis

- STD caused by *Treponema Pallidum*
- Minor early illness
- More serious late manifestations after variable latent period
- “Great Imitator” because numerous symptoms and signs esp 3° syphilis
- Can be acquired congenitally

Syphilis in Pregnancy

■ Causes

miscarriage

stillbirth

IUGR

Preterm delivery

Congenital infection

Congenital syphilis

- 40% of babies are stillborn
- 40-70% of survivors will be infected
- 66% of live infected infants asymptomatic at birth

Lyme disease in pregnancy

- Effect of pregnancy on Lyme disease
- Effect of Lyme disease on pregnancy
- Treatment and prophylaxis in pregnancy

Lyme disease in pregnancy

- Difficulty in defining cases
- Paucity of publications

Effect of Pregnancy on Lyme

- Attenuation of the effects of Lyme disease in a pregnant mouse model

Moro MH et al. Gestational attenuation of lyme arthritis is mediated by progesterone and IL-A. J Immunol 2001 166 (12):7404-9

- No studies to substantiate this effect in pregnant women
- Anecdotal evidence

Does transplacental passage of *B. Burgdorferi* occur?

- 1985 - EM in 1st trimester → NND with borrelia in autopsy fetal spleen, kidney and bone marrow

*Schlesinger PA et al
Ann Intern Med 1985 103(1):67-68*

- 1987 - 5 cases of transplacental transmission of BB with cardiac anomalies in 3 of the fetuses

*MacDonald AB et al
NY State J Med 1987 87:615*

Congenital and gestational Lyme borreliosis

- 263 cases in the literature where outcome noted
- 66/263 cases showing adverse outcome ass'd with gestational Lyme borreliosis
- High incidence of 2nd trimester miscarriages
- Lack of inflammatory findings even when spirochetes were present

*Gardner T, 2001
Infectious Diseases of the Fetus and Newborn Infant
5th Edition Ed Jack Remington*

Review of 66 cases cont'd

- Majority of fetal deaths occurred after 1st or 2nd trimester infection (19 out of 20)
- 15/66 (23%) cardiac malformation
- 10/66 (15%) neurological malformation
- Congenital infection

Clinical manifestations of CLD

- Early congenital, severe

Present in 1st week with sepsis

Mortality, CHD, RDS, Prematurity

- Early congenital, mild

Present in first 2 weeks with mild illness

Jaundice, rash, IUGR

- Late congenital

Present in first 2 years with subacute illness

Adverse outcomes 273 cases

- Effect of trimester on infection
1st 32%, 2nd 25%, 3rd 16%
- Effect of gestational abx
Protective effect 15% vs 67%
- Fetal loss rate
Overall 8% but reduced with abx
- Rate of NND
2% (6/262)
- Rate of neonatal illness
15% (40/262) 11% vs 30% with abx

1999 Maraspin V et al.

Wien Klin Wochenschr 111(22-23):933-40

- 105 pregnant Slovenian women with EM
- All had 14 days iv abx
- 93% had healthy term infants
- Incidence of preterm delivery, congenital malformations and miscarriage no higher than in the general population

Does Transplacental Transmission increase the risk of poor outcome?

- Association with poor outcome does not prove a causal link
- Large prospective epidemiological studies with follow up on outcome are required

Postpartum infection

- *Borrelia* DNA has been identified in human breast milk
- No evidence of post partum transmission

Schmidt BL et al 1995 Detection of B burgdorferi DNA by PCR in the urine and breast milk of patients with lyme borreliosis. Diagn Microbiol Infect Dis 21 (3):121-8

Prospective serological studies

- 1993 Strobino et al *Am J Obstet Gynecol* 169:367-374
examined 2000 pregnancies prospectively in NY. They concluded that gestational LD was not ass'd with increase of fetal death, prematurity or malformations. Tick bites > 3 years of conceptions ass'd with congenital malformations
- 1995 Williams et al *Paediatr Perinat Epidemiol* 9(3):320-330
studied 5000 women. Significantly higher incidence of CHD in infants from high endemic areas, but no increase in other malformations

Maternal Lyme disease and CHD

- 1957 cases of cardiac anomalies matched with 2750 controls
- Questionnaires to assess maternal history of tick bites / Lyme disease
- No ass'n between periconceptual Lyme disease and ↑risk of CHD

Strobino B et al 1999

Maternal LD and CHD: A case-control study in an endemic area

Am J Obstet Gynecol 180 :711-6

No evidence of increased risk
for adverse outcomes and no
evidence to support routine
screening

Strobino et al 1999

Walsh CA et al 2006

Lyme disease in Pregnancy:
Case Report and Review of the
literature

Obstet Gynecol Survey 62(1) 41-48

Walsh et al 2006

- Existence of Congenital Borreliosis syndrome remains unproven
- Treat Lyme Disease in pregnancy as for non pregnant population (IDSA)
- No evidence to treat asymptomatic women who are seropositive for Lyme antibodies
- Routine prophylaxis after a tick bite is not recommended
- No evidence that LD can be transmitted via breast milk

Limitations of EBM

- Clinical practice should be aided and informed – rather than dictated – by evidence
- It is a profound mistake to apply the evidence thoughtlessly without taking into account the limitation of the evidence, the individual predicament and the characteristics of the patient in front of them

Prof Geddes, Professor of Psychiatry, Oxford

Dr Charles Ray Jones

- Over 300 children with congenital Lyme or early neonatal Lyme from breast milk
- Mothers of these children have frequent miscarriages and difficult pregnancies
- Most children present with illness shortly afterbirth

Dr Charles Ray Jones

- 160 women with LD treated with abx periconceptually and during pregnancy
- 8 cases Bb +/- bartonella +ve placentae cords or foreskins
- +ve PCRs → 6mths abx treatment
- All have normal healthy infants

Diagnosis of gestation LD

- Symptoms and diagnosis are the same in pregnant and non pregnant women
- IDSA vs ILADS viewpoints

IDSA recommendations

- Pregnant and lactating patients may be treated in a fashion identical to non pregnant patients with the same disease manifestation, except that doxycycline should be avoided

IDSA guidelines CID 2006:43

- Chronic lyme disease does not exist

ILADS guidelines

- Pregnancy not mentioned

Dr Burrascano's guidelines wrt pregnancy

- Prophylaxis for high risk bites
- Recommends adequate doses of abx during pregnancy to prevent congenital infection
- Abx can be given orally or parentally
- Post partum relapse
- Avoidance of breastfeeding

My Conclusions

- Congenital Lyme disease exists
- Reinterpretation of literature needed in light of current knowledge
- More studies needed in high risk areas
- Offer screening questionnaire to pregnant women
- Low threshold for treating women: risk versus benefit analysis