

Lyme disease during pregnancy

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The epidemiology of Lyme disease began with the observation of a marked increase in juvenile arthritis in Lyme, Connecticut. It was determined that this epidemic was caused by *Borrelia burgdorferi*, a spirochete transmitted by ticks (*Ixodes dammini* or related ixodid ticks). In the western United States, the disease may be transmitted by *Ixodes pacificus*. Early stages of this illness, which has been reported nationally, are characterized by a distinctive bull's eye skin lesion (erythema migrans), which is seen in 60-80% of patients, and nonspecific flu-like symptoms. Untreated disease may result in neurologic or cardiac manifestations, which may appear within 4 to 6 weeks after the onset of early signs and symptoms. A late manifestation of Lyme disease is arthritis, usually intermittent inflammatory arthritis of a large joint. Approximately 60% of untreated patients will develop joint involvement ranging from mild to moderate arthralgia to chronic destructive joint disease.

There are no definitive early diagnostic tests. In early stages of the illness, only 50% or fewer patients will have a seropositive enzyme-linked immunosorbent assay or indirect fluorescent antibody test for *B. burgdorferi*. Patients with late Lyme disease will usually be seropositive. Suspicion of early maternal infection is usually based on a history of exposure to a tick bite, the presence of the distinctive skin lesion, and nonspecific flu-like symptoms. Since the presence of erythema migrans is diagnostic, it may be helpful to enlist the aid of an experienced physician to examine the woman.

Spirochetes cross the placenta and have been found in the tissues of stillborn fetuses; however, the frequency of fetal infection is unknown. Hence, the obstetric dilemma is when to treat women who are suspected of having early-onset Lyme disease but are seronegative. It may be

preferable to treat pregnant patients on the basis of the described clinical picture prior to the development of late maternal disease. Current data do not support counseling for pregnancy termination.

Adequate prophylactic treatment for deer tick bites during pregnancy and treatment of suspected early disease are 3 weeks of either amoxicillin, 500 mg three times a day, or penicillin V, 500 mg four times a day. Erythromycin at 250-500 mg four times a day has been reported to be less effective but is the secondary choice for pregnant women who are allergic to penicillin. Adequately treated patients may never develop antibody to spirochetes.

The infant's health care provider should be informed when maternal disease is suspected. The decision of whether to treat the newborn of a woman with suspected or proven Lyme disease should be discussed with the attendant pediatrician.

The best preventive measure is to avoid heavily wooded areas, where ticks can be found. If entrance into such areas is necessary, it is best to use barrier methods such as wearing long-sleeved shirts and long pants tucked in at the ankles.

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MICROSCOPIC CULPRITS—This Lyme spirochete, shown here magnified under a microscope, was identified by Dr. Alan Macdonald of Southampton Hospital. Macdonald and others have studied tissue taken from stillborn infants which indicates, like syphilis, Lyme disease can be transmitted from an afflicted pregnant woman to her

Lyme disease eyed as cause of birth woes

Lyme disease, like syphilis, is known to attack human organ systems in an unpredictable manner, travelling from the skin to the brain, heart, nervous system, eyes, liver and joints of the victim. Carried by a tiny bacterial organism known as a spirochete, both Lyme and syphilis are capable of passing from the bloodstream of an afflicted mother through the placenta and into fetal tissue. Medical experts are studying the connection between Lyme and birth complications. Story on page 5.

Lyme disease: an attack on unborn

Local experts on Lyme disease are studying the striking similarities between Lyme disease and syphilis, and one researcher charges the Suffolk County Department of Health Services is not doing enough to warn pregnant women about the dangers to them and their unborn children from the tickborne ailment. Physicians in charge of the county's public awareness campaign, however, claim they are waiting for more documentation before admitting there is a connection between Lyme-infected mothers and high instances of miscarriage, stillbirths, and birth defects.

By Julia C. Mead

As researchers and attending physicians study increasing numbers of pregnant women afflicted with Lyme disease, the effects of this relatively new illness on unborn children and newborns is more and more resembling that ancient killer, syphilis.

Like syphilis, Lyme disease is known to attack human organ systems in an unpredictable manner, traveling from the skin to the brain, heart, nervous system, eyes, liver and joints of the host in a sometimes indecipherable pattern of infection, according to medical experts.

Both diseases, they say, are known to progress in stages, although some associated symptoms may not appear at all. Carried by a tiny bacterial organism known as a spirochete, both Lyme and syphilis are capable of passing from the bloodstream of an afflicted mother through the placenta and into fetal tissue, according to doctors.

The effects of syphilis transmitted to unborn babies are

well-documented. However, the possible effects of Lyme upon a fetus is the subject of disagreement between one expert and medical personnel attached to the Suffolk Department of Health Services.

Miscarriages And Lyme

According to Dr. Alan Macdonald, a pathologist at Southampton Hospital and local expert on Lyme, in too many instances, a pregnant woman infected with the Lyme spirochete has miscarried, given birth to a stillborn or dangerously ill baby.

He claims more than 13 miscarriages documented at Southampton Hospital alone are related to Lyme, and has published several papers based on those, and other, cases.

In one case study, published last year in the New York State Journal of Medicine, Macdonald had identified Lyme spirochetes found in tissue extracted from a stillborn infant. The infant's mother was believed to have contracted Lyme disease just prior to becoming pregnant, but did not seek treatment for the common symptoms of skin lesions and a painfully swollen joint.

As a result, Macdonald claims, the mother's disease was allowed to progress unchecked. Lyme spirochetes from the mother were then transmitted to the fetus through the placenta and were later identified by Macdonald in the fetal liver, brain and heart muscles.

Serious Risk

Dr. Bernard Berger, a Southampton dermatologist who has been studying Lyme, agrees that pregnant women and their babies are at serious risk. Like Macdonald, however, he says a lack of reliable statistics forces doctors who treat Lyme patients to rely on their own research.

"Nobody really has information on exactly how Lyme affects unborn infants and pregnant women, but we know that it does," he said.

Berger has had three patients who contracted the disease during the early stages of pregnancy or became pregnant while afflicted. All three miscarried. However, Berger notes, eight of his patients who developed Lyme during the later stages of pregnancy delivered normal full-term babies.

The key, says Macdonald, is early detection and proper treatment.

Early symptoms of Lyme are evidence of a tick bite, expanding red rashes, fever and chills, headaches and fatigue.

Recent studies indicate that large doses of penicillin administered intravenously during the early stages of illness, is the most effective remedy for pregnant women. Other antibiotics such as tetracycline and rocephin usually prescribed for Lyme, but those medications are recommended for use during pregnancy.

No Sure Cure

However, even penicillin is not a proven cure in some cases. "All we can do is offer the best antibiotic treatment available for both the mother and the baby," Macdonald said. "Penicillin has an excellent track record with Lyme, but there's no guarantee."

He cites a 1985 case documented by a German physician, 37, who had contracted Lyme during the six months of her pregnancy had been properly diagnosed and treated with penicillin. She delivered an apparently normal baby at full-term.

Twenty-three hours after the birth, however, the experienced difficulty in breathing and subsequently died. Autopsy revealed Lyme spirochetes in the infant's brain, liver. "This baby's death may not have been directly related to Lyme," Macdonald explained, "but the spirochetes were found despite the penicillin treatment."

"We cannot speculate as to what kinds of problems baby might have had months, years, or decades later," Macdonald said, but that case and others like it have concerned for pregnant women.

Evidence Sufficient

"We believe that evidence is now sufficient to specifically alert women who live in endemic areas for Lyme disease their physicians to recognize the signs and symptoms of infection," the Macdonald paper, co-authored by Dr. J. Benach of Stony Brook University Medical Center and Willy Burgdorfer of the Rocky Mountain Laboratory, Montana, states.

"It is our further recommendation that pregnant women with symptoms of Lyme disease be treated immediately."

Lyme disease...

penicillin in doses equivalent to those used for syphilis in pregnancy," the report concludes.

Despite a regional outcry for increased education of medical professionals, Macdonald contends county public health officials are not doing enough to enlighten the public or physicians practicing in Suffolk.

"The Suffolk County Department of Health has not made the necessary appeal that pregnant women be concerned," he asserts. "Their written record is what is important. What has the county published? One brochure that doesn't even mention pregnancy."

Not Confirmed

Dr. Mahfouz Zaki, director of the county division of public health, claims the relationship between Lyme and pregnancy

"has not been confirmed yet."

"We're waiting for more documentation," Zaki said. "That's the reason pregnancy was not mentioned in our pamphlet. We must be careful not to imply a cause and effect that is not properly documented."

The first printing of the county pamphlet yielded 100,000 copies, most of which have already been distributed. "There will probably be a sentence added to the next edition about pregnancy," Zaki said.

Dr. Martin Mayer, the deputy county director of public health, upholds the county efforts to increase public awareness. He cites the existence of a county task force on Lyme, and a recorded message on a county hotline which gives information on detecting the illness.

Congenital Lyme Spurs Call for Prompt Prophylaxis

■ CINCINNATI—Now Lyme disease is mimicking congenital syphilis.

The Lyme spirochete, which crosses the placenta, is showing up in some babies of women infected by a tick bite before or during pregnancy.

The disease has been implicated in spontaneous abortion, stillbirth, prematurity, congenital anomalies, and neonatal death. But the frequency of adverse outcomes isn't known.

A Marshfield (Wis.) Clinic team is studying seropositive pregnant women prospectively. About 250 have entered the ongoing study, and their miscarriage rate has been no greater than that of seronegative women, Dr. Andrea Dlesk told the American College of Rheumatology meeting here.

Dr. Robert Spector, a Greenwich, Conn., neuro-ophthalmologist, has

seen 43 children with congenital Lyme. Some had major deficits.

Dr. Christine Williams of New York Medical College found some antibody to *Borrelia burgdorferi* in cord blood of 7.1% of 282 newborns in an endemic area, vs. 2.4% of 181 controls in a Lyme-free area. But she found no association between congenital malformations and antibody.

Potentially more sensitive than an ELISA for antibody are newly available tests for spirochete antigens, says Southampton, N.Y., pathologist Alan MacDonald. He's found the organism in tissue or placenta of 15 infants who died in utero or neonatally.

Pregnant women bitten by ticks should get prophylactic penicillin, he emphasizes. "Antibody can take six to eight weeks to show. When in doubt, treat." —Elsie Rosner