



Congenital Transmission of Chagas Disease — Virginia, 2010

Weekly

July 6, 2012 / 61(26);477-479

Chagas disease, caused by infection with the parasite *Trypanosoma cruzi*, affects 8–11 million persons globally (1). In the endemic areas of Mexico, Central America, and South America, most infections are transmitted by triatomine insect (kissing bug) vectors. However, infection also can be acquired congenitally or through blood transfusion, organ transplantation, consumption of triatomine-contaminated food or drink, or laboratory accident (2). Early detection and treatment are highly effective; however, acute infection often is subclinical, and most persons are unaware of their infection. If left untreated, the infection is lifelong. The majority of persons with chronic infection remain without signs or symptoms, but 20%–30% eventually develop disease manifestations, most commonly, cardiomyopathy. Migration from endemic areas has led to an estimated 300,000 persons in the United States with chronic Chagas disease (3), including women of reproductive age who risk transmitting the infection to their children. This report describes the first case of congenital Chagas disease in the United States confirmed by CDC and highlights the importance of raising awareness of Chagas disease among health-care providers.

Case Report

In August 2010, a boy was born to a mother, aged 31 years, who recently had moved to the United States from Bolivia. A cesarean delivery was performed at 29 weeks gestation because of fetal hydrops. The mother reported no chronic medical conditions. The newborn's Apgar scores were 6 at 1 minute and 9 at 5 minutes (normal: 7–10 at 5 minutes). His birth weight was 1,840 grams. He was noted to have ascites, pleural effusion, and pericardial effusion. Diagnostic paracentesis revealed that the ascites fluid was nonexudative. The child had direct hyperbilirubinemia, but electrolytes and glucose were normal. Serologic tests for *Toxoplasma gondii*, rubella virus, and cytomegalovirus were negative. Herpes simplex virus (HSV) immunoglobulin G was positive; however, HSV cultures and a polymerase chain reaction (PCR) test for HSV nucleic acid were negative. Cytomegalovirus PCR, enterovirus PCR, malaria smear, and hepatitis panel also were negative. Acyclovir was administered, and the child received ampicillin and gentamicin for 5 days for presumed sepsis. Antibiotics were stopped after his clinical status improved and blood cultures were negative.

In the child's second week of life, his physicians learned from the mother that, at the time of her previous pregnancy in Bolivia, she had been told that she had Chagas disease. She had not received antitrypanosomal treatment. The child's peripheral blood again was examined, and a blood smear revealed *T. cruzi* trypomastigotes (the extracellular form of the parasite). Serologic tests for anti-*T. cruzi* antibodies were positive, and *T. cruzi* PCR was strongly positive. An echocardiogram showed no abnormality other than pericardial effusion, no

rhythm disturbances were noted during cardiac monitoring, and the child's neurologic examination was normal. He was treated with a 60-day course of benznidazole. His ascites and effusions resolved. Follow-up laboratory testing performed at age 10 months showed that the boy had been cured, based on negative results of *T. cruzi* PCR and negative serologic tests for anti-*T. cruzi* antibodies.

Serologic testing of the child's mother confirmed that she had Chagas disease. A complete history and physical examination revealed no signs or symptoms of the infection, and her electrocardiogram was normal. She was advised to complete a course of antitrypanosomal therapy after her child was weaned. Her other children, who remain in Bolivia, have been referred to a local physician to determine if they are infected.

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Editorial Note

Congenital *T. cruzi* infection has no specific clinical signs. Infected newborns often are asymptomatic or have subtle manifestations. The 10%–40% of newborns who are symptomatic might have low birth weight, low Apgar scores, hepatosplenomegaly, respiratory distress, anasarca, cardiac failure, or meningoencephalitis (4). Severe congenital Chagas disease carries a high risk for neonatal death. However, even severe disease might not be recognized because of the lack of defining clinical features and because the diagnosis is not considered. The diagnosis can be made by detecting *T. cruzi* in cord blood or peripheral blood from the newborn by examination of Giemsa-stained blood smears or buffy coat by light microscopy (5). Molecular methods are the most sensitive, but a positive PCR should be confirmed with a second specimen, because low levels of DNA occasionally are found at birth in uninfected children born to infected mothers. If all results are initially negative, testing of the child should be repeated at 4–6 weeks to confirm lack of infection, because the level of parasitemia increases in the month after birth. Results of serologic testing of uninfected children should be negative at age 9–12 months, after maternal antibodies have waned.

Treatment of congenital infection is highly effective, with cure rates >90% when instituted in the first few weeks of life. Benznidazole and nifurtimox, the antitrypanosomal drugs used to treat Chagas disease, are not Food and Drug Administration–approved in the United States, but they are available through CDC for use under investigational protocols.

The case presented in this report is the first documented congenital transmission of *T. cruzi* in the United States. Additional, but unrecognized, cases likely exist. Congenital transmission occurs in 1%–10% of children born to infected mothers (6–8). Data about the prevalence of chronic Chagas disease in the United States among women of reproductive age are limited, and the risk for transmission in nonendemic areas is unknown. However, by using country-specific seroprevalence and birth rates among immigrants from endemic areas who now live in the United States, and assuming a risk for transmission of 1%–5%, the annual incidence of congenital Chagas disease in the United States recently was estimated to be 65–315 cases (3).

Other reports estimate the annual incidence at 166–638 cases (4). Data about the prevalence of *T. cruzi* infection in pregnant women are needed to guide decisions about the utility of and approaches to screening.

Obstetrician-gynecologists in the United States have limited knowledge of Chagas disease (9). Increased awareness of Chagas disease is needed among health-care providers so that pregnant women who have emigrated from Mexico, Central America, and South America, and who might have been at risk for infection with *T. cruzi* can be identified and screened serologically. If the mother is known to have chronic Chagas disease, the newborn should be tested and, if infected, given prompt treatment. All children previously born to seropositive mothers should be screened serologically and offered treatment, if needed. Although treatment is most effective when provided early in infection, treatment of chronic infection might prevent or slow disease progression (10). The safety of antitrypanosomal drug use in pregnancy has not been studied; however, treatment of the mother after delivery and when she has finished breastfeeding is recommended (10) and might reduce the incidence of transmission of *T. cruzi* among future offspring.

CDC provides assistance for questions about laboratory diagnosis, management, and treatment of Chagas disease by telephone (404-718-4745) and e-mail (parasites@cdc.gov). Additional information about Chagas disease is available at <http://www.cdc.gov/chagas>.

References

1. Pan American Health Organization. Estimacion cuantitativa de la enfermedad de Chagas en las Americas. Montevideo, Uruguay: Organizacion Panamericana de la Salud; 2006. Available at <http://www.bvsops.org.uy/pdf/chagas19.pdf> . Accessed June 26, 2012.
2. Rassi A Jr, Rassi A, Marin-Neto, JA. Chagas disease. *Lancet* 2010;375:1388–402.
3. Bern C, Montgomery S. An estimate of the burden of Chagas disease in the United States. *Clin Infect Dis* 2009;49:e52–4.
4. Oliveira I, Torrico F, Munoz J, Gascon J. Congenital transmission of Chagas disease: a clinical approach. *Expert Rev Anti Infect Ther* 2010;8:945–56.
5. Carlier Y, Torrico F, Sosa-Estani S, et al. Congenital Chagas disease: recommendations for diagnosis, treatment and control of newborns, siblings and pregnant women. *PLoS Negl Trop Dis* 2011;5:e1250.
6. Yadon ZE, Schmunis GA. Congenital Chagas disease: estimating the potential risk in the United States. *Am J Trop Med Hyg* 2009;81:927–33.
7. Bern C, Verategui M, Gilman RH, et al. Congenital *Trypanosoma cruzi* transmission in Santa Cruz, Bolivia. *Clin Infect Dis* 2009;49:1667–74.
8. Torrico F, Alonso-Vega C, Suarez E, et al. Maternal *Trypanosoma cruzi* infection, pregnancy outcome, morbidity, and mortality of congenitally infected and non-infected newborns in Bolivia. *Am J Trop Med Hyg* 2004;70:201–9.
9. Verani JR, Montgomery SP, Schulkin J, Anderson B, Jones JL. Survey of obstetrician-gynecologists in the United States about Chagas disease. *Am J Trop Med Hyg* 2010;83:891–5.
10. Bern C, Montgomery SP, Herwaldt B, et al. Evaluation and treatment of Chagas disease in the United States: a systematic review. *JAMA* 2007;298:2171–81.

What is already known on this topic?

Untreated Chagas disease is a lifelong parasitic infection that eventually can cause cardiomyopathy or other disease manifestations. Chagas is acquired through contact with

triatomine insect (kissing bug) vectors or through other routes, including congenital transmission. Congenital transmission occurs in 1%–10% of children born to infected mothers.

What is added by this report?

A child delivered at 29 weeks gestation in the United States was diagnosed with Chagas disease at age 2 weeks when *Trypanosoma cruzi* trypomastigotes were detected in his peripheral blood. His mother, from Bolivia, was in apparent good health, but later mentioned that she had been diagnosed with Chagas disease in Bolivia. The child was cured with a 60-day course of benznidazole. This first reported case of congenital transmission of Chagas disease in the United States illustrates that congenital Chagas disease, even when severe, might not be recognized or diagnosis might be delayed because of the lack of defining clinical features or because the diagnosis is not considered.

What are the implications for public health practice?

Chagas disease affects an estimated 300,000 persons in the United States; most have emigrated from endemic areas of Latin America where the infection was acquired. Increased awareness of Chagas disease is needed among health-care providers so that pregnant women potentially at risk for Chagas disease can be screened serologically and infected offspring identified and treated. Data about the prevalence of Chagas disease in pregnant women are needed to guide decisions and recommendations for screening.

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Page last reviewed: July 06, 2012

Page last updated: July 06, 2012

Content source: [Centers for Disease Control and Prevention](#)

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