Preconception Seroconversion and Maternal Seronegativity at Delivery Do Not Rule Out the Risk of Congenital Toxoplasmosis

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We describe two unusual cases of congenital toxoplasmosis, one occurring after preconception maternal infection with cervical adenopathies and the other occurring after maternal infection at the very end of pregnancy with maternal seronegativity at delivery. These documented cases of congenital toxoplasmosis demonstrate the value of extending the serologic monitoring period during pregnancy, according to the individual clinical context.

Congenital toxoplasmosis (CT) usually follows maternal infection by Toxoplasma gondii during pregnancy, which can be detected by routine serologic screening tests (13). Preconceptional infection can occasionally lead to fetal involvement, mainly in immunodeficient women (2), but also in immunocompetent women with clinical signs such as cervical adenopathies (6, 11, 16, 18). Women infected at the very end of pregnancy may remain seronegative at delivery (7, 19). We describe two recent cases of CT which illustrate these extreme situations.

Case 1. A 22-year-old woman first underwent serologic testing for toxoplasmosis, in a private pathology laboratory located in the Champagne-Ardenne region of France, on 3 June 2000 during an etiologic workup of cervical adenopathies that had arisen a fortnight previously. Detection of T. gondii-specific immunoglobulin G (IgG) and IgM antibodies using Sanofi Pasteur’s enzyme-linked immunosorbent assay (ELISA) Access pointed to recent infection (IgG, 35 U/ml [positivity cutoff, 6 IU]; IgM, 540 Access units [AU]/ml [positivity cutoff, 100 AU/ml]). A subsequent test in early August, after diagnosis of pregnancy (last menstrual period, 22 May 2000), showed an increase in the antibody titer (ELISA Access results: IgG, 500 IU/ml; IgM, 220 AU/ml). As recommended in such cases by our toxoplasmosis group, spiramycin was prescribed and antenatal screening was programmed (16). Testing of amniotic fluid at the 16th week of pregnancy by PCR for T. gondii DNA (B1 gene) and for infective T. gondii by mouse inoculation was negative (3, 4). At the same time, testing was positive for specific IgM and IgA antibodies in a new maternal serum sample by means of a homemade immunocapture test using a T. gondii suspension for antibody detection (respective values of 8.5 and 4 out of 12) (10, 12), and testing for specific IgE was positive by ELISA, strongly suggesting active infection (17). The fetal sonographic aspect was normal at 22 weeks of pregnancy, but signs of hydrocephalus were present at 32 weeks. Fetal MRI performed 1 week later confirmed dilation of the lateral ventricles and showed growth retardation. The woman chose to terminate the pregnancy. Amniotic fluid and fetal blood sampling, parasitologic studies of the placenta, and pathologic examination of the fetus were performed. Amniotic fluid was positive for T. gondii by PCR and by mouse inoculation. Fetal blood and the placenta were also positive for T. gondii by mouse inoculation. In mouse inoculation, the washed sample pellet (fetal blood, amniotic fluid, or ground trypsinized placenta) is inoculated intraperitoneally into mice. After 4 to 6 weeks, mouse serum is tested for anti-Toxoplasma antibodies and parasites are isolated from mouse brain if the tested serum is positive (4, 14).

Comparative mother-fetus immunologic studies based on enzyme-linked immunofiltration assay showed a profile of fetal IgG and IgM antibody synthesis characteristic of CT (5).

Case 2. A T. gondii-seronegative primiparous pregnant woman (31 years old) underwent routine monthly screening for toxoplasmosis, as required by French legislation. Serologic tests done in another private pathology laboratory (also in the Champagne-Ardenne region) the day before delivery (23 May 2001) were negative (IgG, 0 U/ml in the Abbott IMX assay and high-sensitivity direct agglutination; IgM, 0.38 in the Abbott IMX [positivity cutoff, 0.50]). Five weeks after delivery, a final screening test of the mother (performed systematically by our group) showed clear seroconversion (IgG, 800 units/ml [high-sensitivity direct agglutination]; IgM and IgA positive at 12 and 9.5 out of 12 respectively by immunocapture test; IgE positive by ELISA). CT was subsequently diagnosed in the newborn (IgM and IgA, 12 and 11 out of 12, respectively; IgE positive by ELISA; IgG and IgM neantibody detection by enzyme-linked immunofiltration assay) (8, 9). The child is receiving treatment at the time of publication, and clinical, radiological, and ophthalmologic findings are normal (1).

These two cases illustrate the importance of routine toxoplasmic risk assessment during pregnancy and the need to adapt the screening strategy to special situations.

Maternal infection prior to conception normally excludes the risk of fetal infection (13). However, this may not be the case when maternal seroconversion occurs a few weeks (or perhaps a few months) before conception and is accompanied...
by cervical adenopathies (2, 6, 11, 16, 18). This risk was taken into account in case 1. Testing of amniotic fluid at 16 weeks was negative, possibly owing to the small sample volume that can be obtained at this stage of pregnancy. Sonographic monitoring was continued, however, given the limitations of antenatal screening, whatever the potential sensitivity of the technique used (5, 14, 15). Fetal abnormalities detected by sonography were further characterized by magnetic resonance imaging, the remarkable precision of which makes it an important tool when assessing potential complications in a fetus infected by T. gondii.

The risk of fetal involvement is highest when maternal infection occurs in the third trimester. The possibility of maternalfetal transmission when maternal infection occurs at the very end of pregnancy (19)—even when signs of seroconversion are absent at delivery—has led our group to recommend a final routine serologic test 1 month postpartum for all women who remain seronegative at delivery (7). This strategy is borne out by case 2 of this report.

Screening for toxoplasmosis during pregnancy is costly, and indications aimed at covering unusual situations must be very well documented.

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