

Infections and pregnancy: from a dream to a nightmare

G. Greub

Guest Editor

Institute of Microbiology, University Hospital, University of Lausanne Bugnon 48, 1011 Lausanne, Switzerland

E-mail: gilbert.greub@chuv.ch

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Pregnancy is a happy event and the start of a new life. However, owing to infections acquired or reactivated during pregnancy, the dream of being pregnant may change to a nightmare. Indeed, infections may impair fetal viability, may cause long-term sequelae, or may lead to a variety of adverse pregnancy outcomes, including miscarriage and pre-term labour.

With this special issue on infections and pregnancy, our aim is that infectious disease specialists and microbiologists will have an overview on some major threats to the materno-fetal unit.

Thus, in their review article [1], Lazzarotto *et al.* summarize the current knowledge available on cytomegalovirus, with a focus on congenital infection, prevention and diagnosis. In a nicely structured and educative article, Lazzarotto *et al.* remind us of the major consequences for the fetal brain of congenital infections, which may lead to hearing loss and/or mental impairment. This article also outlines the main preventive efforts that might be made, discussing vaccine development, cytomegalovirus screening and behavioural measures. Finally, Lazzarotto *et al.* summarize the diagnosis of maternal infection, focusing especially on serology, which remains the main diagnostic approach for this viral infection.

In the second article [2], Melin recapitulates current knowledge on neonatal infection with *Streptococcus agalactiae*, the major cause of neonatal sepsis. Her article clearly summarizes the main issues concerning the prevention of this infection: (i) gastrointestinal colonization with *S. agalactiae* is common and generally asymptomatic, and screening has been widely implemented, with a significant impact; (ii) thanks to the development of point-of-care tests, the impact of screening might increase; and (iii) intrapartum antibioprophyllaxis to reduce transmission to the neonate. Moreover, this article also nicely reviews the pathogenesis and clinical presentation of neonatal group B streptococcal infection, and presents practical clues for the management of *S. agalactiae* neonatal infection.

Because of space constraints, some important infectious agents that threaten fetomaternal health have not been spe-

cifically covered in this special issue. Thus, as an example, *Toxoplasma gondii* (Fig. 1), a strictly intracellular parasite that causes congenital toxoplasmosis, may infect the fetus during maternal primoinfection, with potentially major long-term sequelae [3]. As congenital toxoplasmosis was recently extensively reviewed [3,4], we have preferred to provide an overview of two major health problems affecting pregnant women: chorioamnionitis and miscarriage.

Thus, in the third article [5], Czikk *et al.* recapitulate all that needs to be known about chorioamnionitis, including pathogenesis, clinical presentation, aetiologies, diagnosis and treatment. The mechanism of this infection, which is often ascending following premature membrane rupture, remains poorly understood as yet, and clearly merits greater attention, given the significant associated morbidity.

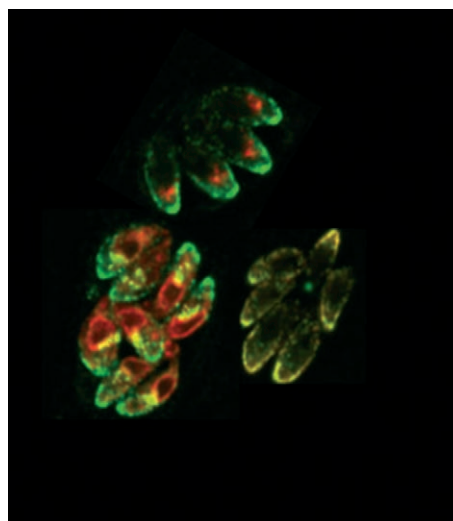


FIG. 1. *Toxoplasma gondii* tachyzoites present in three distinct vacuoles, as seen by immunofluorescence. A secreted protein of *T. gondii* (TgMIC6) that traffic through the ER and Golgi is stained with specific antibodies (in red) whereas another *T. gondii* protein (TgMIC1), which is stored in secretory organelles called micronemes, is stained in yellow. Confocal microscopy, 1000 \times magnification. (This picture is a courtesy of Dominique Soldati-Favre, Geneva, Switzerland).

Finally, the last article summarizes current knowledge on the role of intracellular bacteria in miscarriage, stillbirths and preterm labour [6]. After an overview of *Listeria monocytogenes*, which causes severe adverse pregnancy outcomes in more than 30% of infected pregnant women, Baud *et al.* recapitulate current knowledge on *Coxiella burnetii* infection, which is a common cause of preterm delivery. Another zoonotic intracellular bacterium, *Brucella abortus*, may also cause adverse pregnancy outcomes (premature delivery or miscarriage) and intrauterine infections. Finally, the roles of different members of the order *Chlamydiales* are discussed in this review article, including *Chlamydia trachomatis*, *Chlamydia abortus*, *Parachlamydia acanthamoebae* and *Waddlia chondrophila*. The last of these, which is clearly associated with both sporadic and recurrent miscarriage [7,8], should ideally be screened for, at least after a first episode of miscarriage, as macrolide or doxycycline treatment might prevent an additional episode of fetal loss.

In conclusion, with this special issue on infections and pregnancy, we hope to increase awareness of physicians of the many infectious threats that may impair the outcome of pregnancy, and thus stimulate the implementation of preventive measures and the development of more powerful screening diagnostic approaches. Indeed, with modern microbiological approaches and excellent interactions between obstetricians, paediatricians, microbiologists and infectious disease specialists, it will be possible to further decrease the number of future parents facing the nightmare of materno-

fetal infections and increase the proportion of parents who will be able to live their dream with their healthy newborn.

Transparency Declaration

G. Greub holds two patents for the serological diagnosis of infections caused by *Chlamydia*-related bacteria.

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