http://dx.doi.org/10.1016/j.ijgo.2014.06.013

Scrub typhus continues to be a threat in pregnancy

Mallika Sengupta [a], Santosh Benjamin [b], John A. Prakash [a,*]

[a] Department of Clinical Microbiology, Christian Medical College, Vellore, India
[b] Department of Obstetrics and Gynecology, Christian Medical College, Vellore, India

ARTICLE INFO

Article history:
Received 19 March 2014
Received in revised form 14 June 2014
Accepted 20 July 2014

Keywords:
Fetal loss
India
Pregnancy
Scrub typhus

Scrub typhus, a zoonosis, caused by *Orientia tsutsugamushi* is a widely prevalent disease in the Asia–Pacific region. It is transmitted by the bite of the larval trombiculid mite. The clinical features are similar in pregnant and nonpregnant women and include high fever with chills, myalgia, and headache. The eschar is a 5 to 20-mm necrotic lesion on the skin at the site of the vector bite. It is present in 60% of scrub typhus patients and, if present, is pathognomonic for the disease [1]. Scrub typhus can lead to various complications such as pneumonia, acute respiratory distress syndrome, myocarditis, liver failure, acute renal failure, encephalitis, and shock. Opinion varies on the effects of scrub typhus in pregnancy. The aim of the present study was to evaluate the effect and outcome of scrub typhus infection in pregnancy.

The medical records of 46 pregnant women with scrub typhus treated at the Christian Medical College, Vellore, India, between January 1, 2011, and December 31, 2012, were reviewed. Patients who had fever at least one day before delivery were included. Data for four patients were not available and these patients were excluded. The retrospective nature of the study rendered it exempt from informed consent and IRB approval.

The patients' serum was tested for IgM antibodies to *Orientia tsutsugamushi* using the Scrub Typhus Detect IgM ELISA System (Inbios International Inc, Seattle, WA, USA). The test was performed according to the manufacturer's instructions and a positive result was identified as an optical density of greater than or equal to 0.5.

All 42 pregnant patients included in the study were IgM ELISA positive for scrub typhus. A total of 28 (67%) patients delivered live healthy fetuses, while 14 (33%) patients had pregnancy loss. Of the 6 (14%) patients in the first trimester, 4 (67%) had a spontaneous abortion. Among 16 (38%) patients in the second trimester, 6 (38%) experienced pregnancy loss. Of the 20 (48%) patients in the third trimester, 4 (20%) had an intrauterine death. There was one maternal death due to the infection.

In the general population the standard rates of pregnancy loss across all trimesters, in the first trimester, and in the early and late second trimester are 10%—20% [2], 12%–24% [3], and 1%—5% and 0.3% [2], respectively. In the third trimester the background occurrence of stillbirth is 1%—3% [4]. During the study period, there were an average of 1128 pregnant patients per month, with a live birth rate of 97.2% and a pregnancy loss rate of 2.8%. Therefore, pregnancy loss in patients infected with scrub typhus is significantly higher in this setting (33% vs 2.8%; $P < 0.001$). The hospital is a tertiary care and referral center and the mode of delivery was similar in both groups: 30.5% lower section cesarean delivery rate in the general population compared with 32.7% in patients with scrub typhus.

Regarding the associated risk factors, two patients were hepatitis B surface-antigen positive: one had a live birth and one had a spontaneous abortion. Three patients had hepatitis E infection: one had a live fetus and two had fetal loss. All patients were younger than 35 years (range, 20—33 years; mean 24.3 years). None of the patients had any associated medical risk factors such as diabetes or hypertension. We could not find any relation between parity and fetal loss. None of the patients had a background of recurrent pregnancy loss or poor obstetric history. All of the patients had fever greater than or equal to 38.3 °C and 15 (36%) patients had an eschar. Among the 14 patients with pregnancy loss, 8 (57%) had an eschar.

IgM ELISA is a reliable test for sero-diagnosis of scrub typhus. The optical density value of IgM ELISA for these patients was between 0.656 and 3.336, with a mean of 2.624. Only two of the 42 patients had an optical density value of less than or equal to 1.5. In our experience, optical density of greater than or equal to 1.5 has a very high specificity for scrub typhus.

In conclusion, scrub typhus infection in pregnancy carries a high risk of fetal loss. The risk is highest in the first trimester and decreases with advancing gestational age. However, this correlation needs further evaluation in large prospective studies.

Conflict of interest

The authors have no conflicts of interest.

References

[1] Phupong V, Srettakraikul K. Scrub typhus during pregnancy: a case report and review of the literature. Southeast Asian J Trop Med Public Health 2004;35(2):358–60.
[2] Michels TC, Tiu AY. Second trimester pregnancy loss. Am Fam Physician 2007; 76(9):1341–6.
[3] Jurkovic D, Overton C, Bender-Atik R. Diagnosis and management of first trimester miscarriage. BMJ 2013;346:f3676.
[4] Say L, Donner A, Gülmezoglu AM, Taljaard M, Piaggio G. The prevalence of stillbirths: a systematic review. Reprod Health 2006;3:1.

* Corresponding author at: Department of Clinical Microbiology, Christian Medical College, Ida Scudder Road, Vellore – 632004, India. Tel.: +91 416 2282588; fax: +91 416 2232102.
E-mail address: prakjaj@yahoo.com (J.A. Prakash).

http://dx.doi.org/10.1016/j.ijgo.2014.06.014