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Brief Communication

Scrub Typhus During Pregnancy: A Study from Northeast India

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ABSTRACT

Introduction: Scrub typhus is a crucial underrecognized cause of undifferentiated febrile illness in Northeastern India. Scrub typhus in pregnancy is an uncommon entity. In such cases, not initiating effective and safe antibiotics leads to maternal and fetal complications. To reduce complications, it is a must to keep a high index of clinical suspicion.

Methodology: The present study was conducted to find the various disease manifestations of scrub typhus during pregnancy from January 2014 to December 2018. It was a retrospective study that included hospitalized patients with a diagnosis of scrub typhus during pregnancy. The scrub typhus was diagnosed based on the clinical presentation and serological test with Weil-Felix test titer for OXK more or equal to 1:160 or immunochromatographic test positive for scrub typhus IgM antibody.

Result: During the study period, complete data were obtained from nine patients. The mean age of the patient was 26.5 years. A maximum of five patients presented in the third trimester, and two presented each in the first and second trimesters. Adverse fetal outcome was found in 33.3% of cases. Two patients had multiorgan dysfunction syndrome, and hepatitis was found to be a common occurrence.

Conclusion: Scrub typhus during pregnancy presents a unique problem that is associated with high fetal loss and maternal complications. Keeping a high index of suspicion for diagnosis in endemic regions is essential, as prompt initiation of safe and effective antibiotics can prevent complications.

KEYWORDS: Orientia tsutsugamushi; Pregnancy; Acute febrile illness

INTRODUCTION

Scrub typhus is a common tropical disease caused by *Orientia tsutsugamushi*, a bacterium from the family *Rickettsiaceae,* prevalent in the Asia Pacific region, commonly known as the Tsutsugamushi triangle. Still, cases are increasingly reported from areas outside the Tsutsugamushi triangle also.[1] It is a mite-borne disease transmitted by trombiculid mites. Despite being a prevalent disease in India, many of the cases remain undiagnosed. Most scrub typhus cases present as undifferentiated febrile illness, but if not treated with specific antibiotics effective against *O. tsutsugamushi*, it can lead to complications and death.[2-4]

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Most of the cases were missed due to a lack of suspicion at the level of the clinician and the non-availability of the confirmatory diagnostic test. Antibiotics used for empirical treatment of common bacterial infections are ineffective against scrub typhus. Antibiotic selection even becomes demanding when scrub typhus is suspected or diagnosed during pregnancy, as doxycycline, commonly used for scrub typhus, is avoided during pregnancy.[5] Scrub typhus during pregnancy has been reported with high fetal loss and maternal complication, but data is minimal from northeast India.[6,7] The present study was conducted to find the manifestations and complications of scrub typhus during pregnancy in northeast India.

METHODOLOGY

The present retrospective study included patients diagnosed with scrub typhus during pregnancy. Data were collected for the period from January 2014 to December 2018. All the cases with incomplete data were excluded from the study population. The scrub typhus was diagnosed based on the clinical presentation and a positive serological test with Weil-Felix test titer for OXK more or equal to 1:160 or immunochromatographic test positive for scrub typhus IgM antibody. Prior ethical clearance from the Institute Ethics Committee was obtained to conduct the study.

RESULTS

Fourteen cases were studied during the study period, but five patients were excluded due to incomplete data. Finally, data from nine patients were available for analysis. The mean age of the patients was 26.5 years. Two patients were in the first trimester and second trimester each, and five patients were in the third trimester.

Table 1: Details of patients' age, stage of pregnancy, fetal outcome and complications

Patient's Serial No	Age (in yrs)	Trimester of Pregnancy	Fetal outcome	Complications
1	30	First	Normal	None
2	36	Third	Normal	None
3	23	First	Normal	None
4	20	Third	Normal	None
5	22	Second	Normal	Hepatitis
6	30	Third	Preterm labour	MODS
7	36	Third	IUGR, Oligohydramnios	MODS
8	20	Second	Spontaneous Abortion	None
9	25	Third	Normal	Post-Partum Eclampsia

Two patients developed multiorgan dysfunction syndrome. One case of postpartum eclampsia and one case of hepatitis were also observed. The number of patients having adverse fetal outcomes was 33.3%, with one case each of preterm labor, intrauterine growth retardation, and spontaneous abortion. The details of the pregnancy and outcome for the individual patients are mentioned in Table 1.

DISCUSSION

In this retrospective study of 5-years duration in northeast India of pregnant scrub typhus patients, 1/3rd fetal death was observed along with few maternal organ dysfunctions. Scrub typhus is a common rickettsial disease in the northeast region of India, and multiple outbreaks in the different states in the northeast region have been reported recently.[8-10] In Meghalaya, scrub typhus is locally known as *"Niang Sohot."* Despite being a common cause of acute febrile illness, many times, it remains undiagnosed due to a low level of suspicion by the treating physician and also due to the non-availability of the proper diagnostic test. As common antibiotics used for the empirical treatment of bacterial infection are not effective against rickettsial diseases, it is essential to make the correct diagnosis of scrub typhus at the beginning or to include antibiotics effective against rickettsial diseases in the empirical treatment. Things become tricky when scrub typhus is diagnosed during pregnancy as doxycycline, which is commonly used as an effective treatment in scrub typhus, is usually avoided during pregnancy.

Scrub typhus, if not appropriately treated, can lead to complications and death. The most common complication associated with scrub typhus is hepatitis. But many times, hepatitis may be associated with acute kidney injury or other organ involvement, and that leads to multiorgan dysfunction syndrome (MODS). In the present study, more than one-third of patients developed complications. Although the characteristic eschar is a pathognomonic sign for scrub typhus, its

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presence may vary from 10% to 90% of cases. In some case series, the investigators did not even find any eschar.[9,11-13] In the present study, none of the cases had eschar. The absence of eschar makes the clinical diagnosis more difficult. Therefore, it is essential to include the diagnostic test of scrub typhus during the initial evaluation of acute febrile illness in the endemic region to administer effective antibiotics promptly.

Fetal loss among patients with scrub typhus has been reported in a high proportion of patients (up to 40%), and also preterm delivery is a common pregnancy-related complication.[6,14] The present study shows that one-third of patients have adverse fetal outcomes.

Azithromycin is a drug commonly used for scrub typhus during pregnancy that was used in this study population. It can be given as oral preparation or as an injectable and is very effective against scrub typhus.[6] Since the antibiotics commonly used for bacterial infections like cephalosporins or fluoroquinolones, etc., are not effective in scrub typhus, a high index of clinical suspicion, timely diagnosis followed by initiation of an appropriate antibiotic effective against *O. tsutsugamushi* is essential to prevent complications and death.[15,16]

CONCLUSION

Scrub typhus during pregnancy presents a unique problem that is associated with high fetal loss and maternal complications. As common antibiotics are ineffective against *O. tsutsugamushi*, a high index of clinical suspicion and timely diagnosis followed by prompt initiation of azithromycin is required to prevent complications.

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CONFLICT OF INTERESTS STATEMENT

The authors declare no conflict of interest

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AUTHORS' CONTRIBUTIONS

MJ: Conceptualization; Methodology; Data curation; Analysis; Writing the draft

PKB: Conceptualization; Review & editing; Supervision; Validation

KGL: Conceptualization; Review & editing; Supervision; Validation

NS: Conceptualization; Methodology; Data curation; Analysis; Writing the draft

AI DECLARATION

No AI tool was used to generate research data, perform data analysis, interpret findings, formulate scientific conclusions, or make editorial decisions. All AI-assisted content was critically reviewed, verified, and revised by the authors. The authors take full responsibility for the accuracy, originality, integrity, and final content of the manuscript.

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