Spotting the spotted fever

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ABSTRACT

With a surge in rickettsial infections in our country, there is an apparent necessity to upgrade the laboratory expertise to detect the same. We were able to arrive at a diagnosis of rickettsial Spotted fever in a child who presented with fever and rash with the support of appropriate investigations.

Keywords: Indian tick typhus; immunofluorescence assay; *Rickettsia conorii;* Weil-Felix reactions; enzyme linked immunosorbent assay.

INTRODUCTION

Indian Tick typhus is a zoonotic and self-limiting disease caused by an obligate intracellular organism *Rickettsia conorii* and commonly transmitted through the bite of the brown dog tick *Rhipicephalus sanguineus.* This disease has been distributed in India and several countries throughout the world (1-12). Common clinical symptoms of this rickettsial infection are fever with or without headache, myalgia, and a maculopapular rash which will appear 5 days after onset of fever. Center for Disease Prevention and Control (CDC) has also included a painless eschar as one of the symptoms of Spotted fever and it is seen in 70% of the febrile patients (1). Complications are severe thrombocytopenia, purpura, neurologic deficits, respiratory and /or renal failure and death (1-3). It is a vasculotropic rickettsiosis which affects endothelial cells and the agent is disseminated through different parts of the body. Case reports of spotted fever starts appearing in Indian literature in the recent past with involvement of heart, retina, meninges and brain (9-12). Isolation of spotted fever group rickettsia can be made only in specialized laboratories with Bio-safety Level III containment facilities. Laboratory diagnosis of Rocky Mountain Spotted Fever (RMSF) and related spotted fever group is by a 'gold standard' serological testing Immunofluorescence Assay (IFA) (1, 6). We are reporting a child with rickettsial spotted fever (Indian tick typhus) who presented as fever without focus and then happened to develop a rash which was a leading clue to our timely and accurate diagnosis.

CASE REPORT

A four-year-old boy residing in a rural area was brought with fever of seven days' duration which was associated with myalgia. He was admitted as a case of fever without focus initially, but on the next day he developed a popular rash which first appeared over the forearms, then to legs, face and trunk. The rash was skin colored with no erythema, non-itchy and eschar was absent (Fig.1).

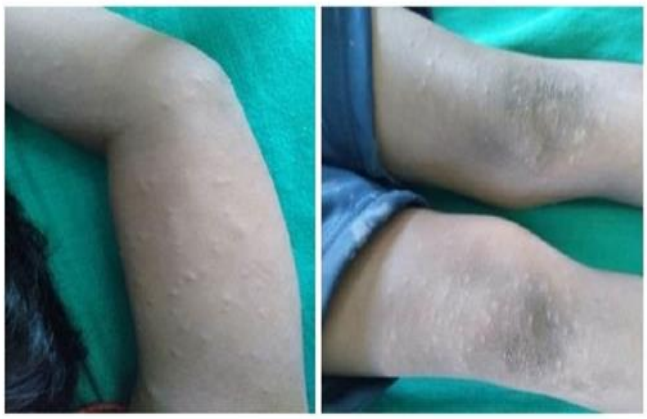

Figure – 1: Papular Rash with no erythema

The palms and soles were not involved and there were no genital or anal or oral lesions. No abnormalities were found during systemic examination. There was no muscle tenderness. With the above presentation, the possibilities were viral exanthema, enteric fever, rickettsial fever and incomplete Kawasaki's disease. The child was investigated with complete blood counts which was unyielding. ESR and CRP were mildly elevated. Liver function tests and the level of serum sodium were also normal. Widal and Rapid Immuno chromatographic test (ICT) for IgM against Scrub typhus (Scrub Typhus Detect IgM Rapid Test, InBios International, Seattle, U.S.A.) were also negative. However, there was a strong suspicion of spotted fever (SF), given the setting of unsettling prolonged fever with rash and no other clinical or laboratory clues towards alternate diagnosis. Hence, Indirect Immunofluorescence Assay (IFA) testing for IgG was done for *R. conorii*, which is known to cause RMSF in our country (4, 5). *Rickettsia conorii* IgG titre in IFA (Fuller laboratories, California, USA), was 1: 256 which clinched the diagnosis of rickettsial Spotted fever. In addition to IFA, Weil Felix test was done which gave the following.

RESULTS

OXK titre: 320; OX 19 tire 1: 640 and OX2 titre 1:1280. This supported the diagnosis of spotted fever. Although OXK titre was 1:320, Scrub typhus IgM ELISA was negative (Scrub Typhus IgM ELISA InBios International, Seattle, USA). Co-infection with scrub typhus was thus ruled out. Fortunately, this child had a milder form of disease and he was started on oral doxycycline at 4.4mg/kg/day in two divided doses and there was a dramatic decline in fever within a day. He was discharged after he was afebrile for 48 hours and advised with a total duration of seven days of doxycycline therapy.

DISCUSSION

Rickettsial infections are common in recent times, which are under-diagnosed because of lack of appropriate laboratory testing facilities. Variation in the clinical presentation is attributable to the genetic diversity and geographic prevalence of the rickettsial subspecies. The gold standard for the confirmation of spotted fever is the estimation of *R. conorii* IgG titre by Indirect Immunofluorescence (IFA) assay, by demonstrating seroconversion or a fourfold rise in antibody titre between acute and convalescent sera or a molecular testing for rickettsial DNA by PCR, as recommended by CDC (1). Molecular testing is more useful within the first week of illness but is not readily available in all centers. In our case the IgG-IFA assay was done on ninth day of fever and came out as 1:256 which is significant. The acute phase sample was not tested as the child had the rash on the eighth day of the illness only, when RMSF was suspected. IgM for *R. conorii* was not done due to its known high false positivity as reported by different rickettsiologists (1, 2, 6, and 8).

Doxycycline is the first drug of choice in children of all ages, given at a dose of 4.4mg/kg/day in two divided doses for a total duration of seven days or until 3 days of subsidence of fever (1-3) but in complicated cases the duration is 10 days. Alternatives would be macrolides (oral Clarithromycin or Oral/IV azithromycin) and chloramphenicol. Azithromycin is given at a dose of 10mg/kg/day once daily for 5 days.

CONCLUSION

The purpose of this case report is to reiterate that rickettsial infections are on a surge in India and appropriate laboratory testing is the need of the hour, as many cases go undiagnosed or misdiagnosed, thus delaying the early initiation of treatment thereby worsening the prognosis. With timely diagnosis, we could initiate prompt treatment which is easily available and affordable, which in turn reduces the morbidity and mortality.

CONFLICT OF INTEREST: None

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