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Case Report

A case of rocky mountain spotted fever without eschar as a cause of pyrexia with multiple organ failure

Subodh K. Mahto[1]*, Pulin K. Gupta[1], Sahil Sareen[1], Arjun M. Balakrishna[2], Sumit K. Suman[1]

[1]Department of Medicine, PGIMER, Dr. RML Hospital, New Delhi, India
[2]Department of Medicine, Sucheta Kriplani Hospital, LHMC, New Delhi, India

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***Correspondence:**
Dr. Subodh K. Mahto,
E-mail: drsubodhkr05@gmail.com

ABSTRACT

Rocky mountain spotted fever (RMSF) is a rickettsia disease frequently reported from North America and Europe and transmitted by tick bite. This disease is very rare in India and other parts of South East Asia. Fever with rash and thrombocytopenia are the hallmark clinical presentations of viral hemorrhagic fever but other diseases like malaria, typhoid, Leptospira and rickettsia diseases should also be considered in differential diagnosis. Knowledge of geographical distribution, evidence of exposure to the vector and a high degree of clinical suspicion of rickettsia diseases are very important for early differentiation from other diseases to prevent lethal complications and institute initial treatment. We report a rare case of rocky mountain spotted fever (RMSF) from New Delhi, which was confirmed by specific indirect immunofluorescence assay (IIF).

Keywords: Eschar, RMSF, Rickettsia, Thrombocytopenia

INTRODUCTION

RMSF is primarily a disease of western world although rarely reported from India. RMSF is a zoonotic disease, which is transmitted by tick bite and causative agent of this disease is Rickettsia, a pleomorphic obligate intracellular, non-flagellate, gram negative bacillus. Like dengue fever, it also occurs during monsoon season. Rickettsia diseases should be kept as a differential diagnosis in any individual in endemic areas who develops fever regardless of the presence of rash or the history of tick exposure.[1] RMSF is grossly under diagnosed in India because of nonspecific sign and symptoms (close mimickers are viral infection which occur throughout the year in India) limited awareness, limited diagnostic facility and lastly low index of suspicion by physicians. Failure to establish early diagnosis leads to high morbidity and mortality. The typical rash and eschar may not always be present.[2] The severity of RMSF varies from sub-clinical illness to severe illness with multi-organ system involvement unless diagnosed early and treated appropriately. The mortality of this disease is 7-30% mainly due to delayed diagnosis, delayed treatment or multiple organ failure.[3] Clinician should be aware that rickettsia disease may not be a rare entity in plains and should always be kept in mind as a cause for fever of unknown origin.

CASE REPORT

A 60 years old male, working as a cargo worker, with urban background presented to DR.RML hospital emergency with complaints of fever for 7 days, which was high grade, continuous in nature and associated with chills and rigor. He also had multiple joint pains without

any signs of inflammation along with jaundice and petechial rashes all over the body which developed 2 days after the onset of fever. History of an insect bite 4 day prior to the onset of fever, over the left upper thigh, was present but no eschar or scab was found. Patient had progressively increasing yellowish discoloration of eyes which was associated with passage of high coloured urine. He had multiple small reddish, non-blanchable, non-indurated, flat rashes all over body which first appeared over the extremities followed by trunk but palms and soles were not involved. Constitutional symptoms like headache, myalgia, and generalized body aches were present. Patient developed altered sensorium 1 day prior to admission. There was no significant past medical or surgical history. He was a chronic alcoholic and a chronic smoker. On examination, patient was talking irrelevantly, unable to recognize the family members and was not following verbal commands. His core temperature was 104° F. His pulse rate was 100/min, regular and blood pressure was normal in all four limbs. Icterus with petechial rashes all over the body was present. Bilateral crepitation was present in intrascapular and infra axillary region along with mild hepatosplenomegaly. CNS examination revealed GCS of E4V4M5 with no neck rigidity. Bilateral pupils were normal and reactive to light and bilateral planter was flexor. No focal neurological deficient was present.

Laboratory tests revealed 12.9 gm% hemoglobin and total leucocyte count of 3,900/cumm with 76% neutrophils, 20% lymphocytes and 4% eosinophils and platelet count of 45000/cumm. The erythrocyte sedimentation rate was 32 mm/1st hour. Total bilirubin was 5.9 mg/dl with direct fraction 4.1 mg/dl. The SGOT, SGPT and ALP were 304,302 and 204 IU/L respectively. His blood urea was 74 mg/dl and serum creatinine was 1.8 mg/dl. Malaria antigen test was negative for both *P. vivax* and *P. falciparum*.

Table 1: Variation of liver function during hospitalization.

Day	Total bilirubin	ALP	SGOT	SGPT
1st	5.9	204	304	302
2nd	5.1	186	298	266
4th	4.7	144	156	206
6th	2.4	102	109	113
8th	0.7	56	33	45
10th	-	-	-	-

Dengue serology (IgM and IgG), RK39, NS1 antigen and chikungunya serology were negative. HBsAg, Anti HCV and HIV antigen were all negative. Salmonella typhi IgM and IgG were negative. Blood and urine cultures were sterile. MRI brain was normal. CSF examination revealed cells-10/ cumm, predominantly mono nuclear cells, sugar- 64 mg/dl, protein 2.4 gm/dl. CSF staining by Giemsa, Ziehl Nielsen stain and India ink was done and was negative for all. Chest x-ray and USG of abdomen was normal except mild hepatosplenomegaly. Patients was started treatment with inj. ceftriaxone 1 gm I/V BD empirically along within inj. Vancomycin 1 gm I/V along with supportive care.

Brucella and Leptospira serology was send which came out to be negative. Weil Felix test was advice and it showed OX 19-reactive, OX 2- reactive (1:640), OX K-non-reactive (1:160). Rickettsia serology was sent for further confirmation which showed both IgG and IgM positive for serology of RMSF. Capsule doxycycline (100 mg) BD was added through feeding tube. Patient became afebrile, conscious and oriented after 2 days of treatment with Doxycycline. Liver function test, kidney function test and platelet counts returned to normal limits on the 4th day of admission. He received ceftriaxone for 7 days and doxycycline for 10 days. He was discharged after 10 days of hospital stay in satisfactory condition.

DISCUSSION

Delhi and NCR region recently witnessed outbreaks and epidemics of dengue fever and chikungunya fever, presenting with high grade fever, rash, arthralgia and thrombocytopenia. Rickettsia diseases also present in a similar fashion albeit so rarely that early clinical diagnosis is not suspected and often missed, however since the bacteria now does exist in Indian subcontinent, it should be kept as a differential diagnosis of short duration pyrexia along with multi organ failure with or without rash. The presence of Rickettsia diseases in India has been sporadically documented in Jammu and Kashmir, Himachal Pradesh, Uttaranchal, Rajasthan, Assam, West Bengal, Maharashtra, Kerala and Tamil Nadu.[4-6] Our patient worked in air cargo and hence we postulate that probably the tick would have been transmitted through an airplane or cargo transported through planes.

Clinical presentation of RMSF is notoriously non-specific. Patients present with history of fever, malaise, headache, nausea and vomiting after 2-5 days of insect bite.1 Rash and eschar are most common characteristic features of the infection; however, rash and eschar may not be found always.[2,6] Our patient had high grade fever, rash without eschar lesion, history of vector exposure and thrombocytopenia.

Scrub typhus has been more frequently detected among all rickettsia diseases from Himalayan regions of India, whose diagnosis is based on Weil-Felix test alone. Due to lack of availability of confirmatory tests, other rickettsia diseases are not diagnosed commonly.[7]

Weil-Felix test (W-F) has low sensitivity and specificity for diagnosis of these infections but may be helpful in resource-limited clinical sittings. This test is based on the detection of antibodies to certain strain (OX 19, OX 2 and OX K) of Proteus vulgaris, which contains antigens with cross reacting epitopes to antigens from members of

the genus Rickettsia. Another test like indirect immunofluorescence assay (IFA) is a serological method for diagnosis of rickettsia diseases and is considered 'gold standard' but its use is limited by cost and availability. IgM antibodies usually present in the first week of illness and IgG appears in the second week.[8]

Doxycycline (200mg once a day for 7 days) or Tetracycline (25-30 mg/kg body weight/day in divided doses every 6 hours) is the drug of choice. Chloramphenicol (50 mg/kg/day in divided doses every 6 hours.) is an effective alternative. In case of resistance of Doxycycline, Azithromycin (500 OD) or Clarithromycin (500 mg BD) may be used and may also become the drug of choice in children, pregnant women. Rifampicin (900 mg per day for a week) has been found effective and can be used in combination with erythromycin especially against R. conorii and in pregnancy.[9]

CONCLUSION

Although RMSF has been sporadically reported but it is now frequently diagnosed in western and southern India and lately in Haryana and Delhi. Rickettsia infections should be kept as a differential diagnosis of fever even in the absence of eschar. RMSF clinically mimics other infection like dengue, chikungunya, malaria and typhoid fever. Few cases have been reported in Rohtak but rarely a confirmed case has been reported from Delhi. So, we are presenting this case to sensitize Physicians and Emergency care providers towards the presence of RMSF which is albeit very low in prevalence in Delhi and surrounding areas but carries bad prognosis and its early diagnosis and treatment can prevent mortality in these patients.

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