

Rickettsial Infections seen in Rural India

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Abstract

In the scenario of overwhelming bacterial, viral infections and parasitic infestations, rickettsial diseases are an ignored lot. They can present with a myriad of symptoms like fever, headache, rash, meningitis, congestive cardiac failure and shock. They can closely mimic multiple illnesses like meningococcaemia, enteric fever, dengue, leptospirosis and sometimes even leukaemia. The Weil Felix test supported by clinical and epidemiological features of each patient can help to clinch the diagnosis especially when other serodiagnosis facilities are not available. Here we present three cases, all coming from same rural area of Western India, with varied presentations who responded dramatically to anti rickettsial therapy.

Introduction

Contrary to what many physicians believe, rickettsial diseases are not uncommon and often have a fulminant course. The Weil-Felix test, can be very useful in our part of the country since it is cheap, easily available and due to unavailability of other diagnostic tests.

Here we present three cases with varied presentations all hailing from Raigad, a rural place from Western India responding promptly to specific anti rickettsial therapy.

Case 1

A 4½ year male child, presented with fever, myalgia of 2 weeks duration and a petechial rash progressing from limbs to trunk on day 6 of fever. On examination the child was toxic and had hepatomegaly, generalized lymphadenopathy and pedal oedema. Investigations revealed white blood cell (WBC) count $80.3 \times 10^3/\mu\text{l}$ (P77 L21 E2), platelet count $25 \times 10^3/\mu\text{l}$, serum Sodium (sr Na) 126 meq/l, SGOT 71 IU and SGPT 67 IU. With a provisional diagnosis of leukaemia, bone marrow aspiration was done, which was normal. Dengue, leptospirosis and typhoid common in our area were ruled out. Weil

Felix test showed titres OX 19 1:320 and OX2 1: 640. On treatment with doxycycline he was afebrile within 48 hours and haematological parameters normalised in 72 hours.

Case 2

A 6 year female child presented with fever for 10 days, macular erythematous rash over the ankles on 3rd day of fever, progressing to the trunk, face, palms, soles and altered sensorium since few hours. She had hepatosplenomegaly and neck stiffness.

With a diagnosis of meningococcal meningitis ceftriaxone was started. Investigations revealed WBC $24 \times 10^3/\mu\text{l}$ (P81, L18, E1), platelet count $128 \times 10^3/\mu\text{l}$, SGOT 170 IU, SGPT 97 IU, serum albumin 2.7 gm/dl, sr Na 128 meq/l. Cerebrospinal fluid analysis showed 60 cells (80% lymphocytes , 20% polymorphs), proteins 18, sugar 55, gram stain not showing any organism. Fever did not respond and neck stiffness persisted even after 3 days of ceftriaxone. Blood and CSF culture did not show any growth. Weil Felix test showed titres of OX 19 1:640 and OX2 1: 160. She was treated with chloramphenicol to which she responded within 48 hours.

Case 3

A 6½ year male child, presented with fever of 5 days duration and hepatosplenomegaly. He was treated with antimalarials and ceftriaxone before being referred to us. Tests for typhoid and dengue were negative. Investigations done at our hospital showed WBC $7.8 \times 10^3/\mu\text{l}$ (P68, L30, E2), platelet count $52 \times 10^3/\mu\text{l}$, sr Na 133 meq/l, SGOT 176 IU, SGPT 150 IU,

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serum albumin 2.4 gm%. Weil Felix titres were OX 19 1:640 and OX2 1:320. Child responded to doxycycline.

Discussion

Rickettsial fever is seldom diagnosed in India, probably due to low index of suspicion and the lack of diagnostic facilities in most laboratories. Earlier reports have documented the endemicity of rickettsioses among adults in parts of India like the Himalayan belt, Maharashtra and Bangalore.¹ There has been very few reports of rickettsioses in children from South India² and also of scrub typhus mostly in adults from the same region.³

Our patients were suspected to have Indian tick typhus based on Weil Felix report. Causative organism is transmitted by tick bite. However none of the patients gave a pertaining history of bite which may pass unnoticed in most cases.⁴ *Rickettsia* multiplies intracellularly and causes a widespread vasculitis in the body involving almost any organ. Tache noire (black spot) which develops at bite site was absent in all our patients, reported rates of incidence being 30-90%.⁵ Maculopapular or at times petechial rash is characteristic. Rash was seen in 2 of our patients and one did not have it. We suspected rickettsial disease in that child because he came from the same rural area as that of other patients and routine investigations were negative for common infections seen in our part. Hepatomegaly (1/3rd patients) and splenomegaly (20%) is present in children with tick typhus.⁵ All of our patients had significant hepatomegaly while two had splenomegaly.

A few laboratory data may give helpful clue e.g. complete blood count shows leucopenia in majority⁶ (uncommon feature of bacterial infection). However two of our patients had leucocytosis without any evidence of other bacterial infections. One child had very high WBC count making us suspect leukaemia.

Thrombocytopenia which occurs due to adherence of platelets to the endothelial cells occurs in varying severity. Liver affection is seen as an elevation in transaminases. *Rickettsiae* cause a failure of sodium pump causing a mild to profound hyponatraemia.⁵ These features were also noted in our patients.

Meningococcaemia has a similar presentation like rickettsial infections. Early in both diseases, there may be a normal or low leucocyte count, signs of meningeal irritation, and a moderate pleocytosis in the cerebrospinal fluid. It is indicated to start therapy for both organisms since; both can cause an early fatality.⁵ Our prompt institution of chloramphenicol after positive Weil Felix test brought a dramatic response in one of the patients otherwise suspected with meningococcaemia and not responding to ceftriaxone. The time proven therapy for rickettsial infection are tetracyclines and chloramphenicol, the drug of choice being doxycycline at all ages including young children.⁷ This is because doxycycline toxicity like tooth discoloration is dose dependent and it is unlikely that children will require multiple courses. Chloramphenicol is used for patients with doxycycline allergy and in pregnant women.⁷

These cases seen within span of 2 months (Nov-Dec) documents presence of rickettsial infections in a part of rural Western India with no previous report of rickettsiosis. *Rickettsial* infection should be considered in patients not only with fever and rash but also in febrile children who live in an area with previous reports of this infection, even in absence of more specific features.⁸ Weil-Felix is the only test available to substantiate the diagnosis in absence of other diagnostic modalities like the complement fixation, the immunofluorescence antibody test, ELISA,

PCR and cultures. The titres OX19 and OX2 are positive for tick typhus. Single titres of 1:160 or more is diagnostic^{5,9} as seen in all our patients. Studies from other part of Asian continent has also suggested this test to be useful in diagnosing rickettsial infections, however it has to be carefully correlated with the clinical features to arrive at the diagnosis.^{2,10}

To conclude a child with fever and rash should prompt us to think beyond the usual suspects of dengue, measles, leptospirosis, leukaemia, meningococcaemia and think of rickettsial infections. A delay in diagnosis and therapy is a significant factor associated with death or severe illness and irreversible damage to important organs,¹¹ in an illness which otherwise recovers completely with a timely therapy. Not to forget the Weil Felix test which can be considered a great aid in diagnosis.

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CIRCUMCISION TO PREVENT HSV-2 AND HPV INFECTIONS AND SYPHILIS

In two studies in Uganda involving 3393 adolescent boys and men who were seronegative for HIV and for herpes simplex virus type 2 (HSV-2), circumcision reduced the acquisition of HSV-2 and the prevalence of high-risk human papillomavirus (HPV) infection but *not* the acquisition of syphilis.

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