

CASE REPORT

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Leptospirosis complicating the malarial fever in pregnancy: An unusual complication

Sanket K Mahajan, Daanish A Chhapra

ABSTRACT

Introduction: Malarial fever is common in tropics but it becomes difficult to diagnose it in the presence of leptospirosis, the clinical picture of which is masked by malarial fever. We report such case of mixed infection of malaria with leptospirosis in pregnancy which was diagnosed with very high index of suspicion. **Case Report:** A mixed infection of *P. vivax* malaria complicated by leptospirosis in 27th week of a pregnant patient who presented with fever with rigors, abdominal pain and jaundice, the prompt diagnosis of which helped us in proper aggressive treatment in the form of quinine and ceftriaxone along with supportive care with excellent outcome. **Conclusion:** Mixed infection leads to underdiagnose certain tropical diseases, especially the coinfection by leptospira in a diagnosed case of malaria where the clinical picture coincides and so timely and correct interpretation of the clinical presentation, laboratory investigations and the response of the patient to the treatment leads to excellent patient outcome.

Keywords: Malarial fever leptospirosis mixed infection pregnancy

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INTRODUCTION

Dual infections are common and underdiagnosed in tropics. Coinfection with *P. vivax* malaria and leptospirosis is uncommon, especially in pregnancy and only a few cases are reported in literature. Failure to diagnose and treat potential coinfections may lead to poor outcomes. The management of dual infection is complicated by their similar clinical presentations, and because the confirmatory diagnosis of malaria is readily available as opposed to that of leptospirosis, treatment focusing on malaria mono-infection instead of dual infections could result in a delay of specific therapy for leptospirosis and possible consequences of serious complications. It is known that the worldwide distribution of malaria [1] overlaps with that of other infectious diseases, including leptospirosis. Coinfection of malaria with leptospirosis is rare and has been only been reported in seven (two definite and five probable) cases [2]. Coinfections of malaria with filariasis [3], non-typhoidal *Salmonella* bacteremia [4], dengue [5, 6], hantavirus [7, 8], human immunodeficiency virus [9], and *Borrelia* [10] have been reported. We report such a case of mixed infection during pregnancy, the diagnosis of which was done to the earliest and its treatment was started aggressively which led to complete recovery of the patient but unfortunately she suffered from intrauterine death of her fetus.

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CASE REPORT

A 27-year-old primigravida came to hospital with complaints of generalized colicky abdominal pain since 8 days before admission. She also had fever with rigors since 4 days before admission—on and off, more in the evening, followed by profuse sweating. She also complained of generalized throbbing headache, on and off, especially during fever spikes. Fever and headache were since 4 days before admission to our hospital. On general examination, her pulse was 110/min, regular; BP-110/70 mmHg; Pallor and Icterus were present. No evidence of cyanosis, clubbing, lymphadenopathy or pedal oedema. On systemic examination, her cardiovascular and respiratory systems were normal. Per abdomen examination revealed generalized tenderness with firm splenomegaly (1 cm below the left costal margin). Her complete neurological examination was normal along with no signs of meningeal irritation. Her laboratory parameters were as follows:

Hb: 7.5G%, TLC: 8100/cmm, Platelet Count: 90000, Peripheral smear showed schizonts of *P. vivax* (Figure 1) with parasitic index of 0.8%, blood urea: 71 mg/dL, serum creatinine: 1.7 mg/dL, total bilirubin: 4.5 mg/dL, indirect bilirubin: 2.7 mg/dL, direct bilirubin: 1.8 mg/dL, SGOT: 40 IU/L, SGPT: 10 IU/L, serum alkaline phosphatase: 70.

As she was pregnant, she was started on quinine therapy which was continued for full 7 days. Her fever spikes started reducing but icterus was gradually increasing and so liver function tests were repeated after 2 days of admission which were as follows: total bilirubin: 10.5 mg/dL, indirect bilirubin: 5.4 mg/dL, direct bilirubin: 5.1 mg/dL, SGOT: 51 IU/L, SGPT: 30 IU/L, serum alkaline phosphatase: 67. Owing to these reports, a suspicion raised about possibility of coinfection with leptospirosis and so the blood was sent for IgM-Leptospira study which showed a strongly positive titre of 23 u/mL (normal value: <15 u/mL). She was immediately started on injectable ceftriaxone 1 g IV q 12th hourly and ceftriaxone was continued for complete 7 days in the same dose. Her icterus started fading rapidly and she became totally afebrile within 24 hours of starting the therapy with ceftriaxone. Meanwhile, her malarial parasitaemia also cleared off completely, confirmed by the peripheral blood smear. Her G6PD and liver function tests were within normal limits so she was started on radical cure for vivax malaria (primaquine for 14 days) as per the WHO guidelines. She was discharged after 10 days of stay in hospital in a hemodynamically stable condition. Unfortunately, she suffered from intrauterine death of her fetus on the second day of admission to the hospital.

DISCUSSION

Leptospirosis is difficult to diagnose in the presence of malaria and requires a high index of suspicion because the symptoms and signs overlap—even if

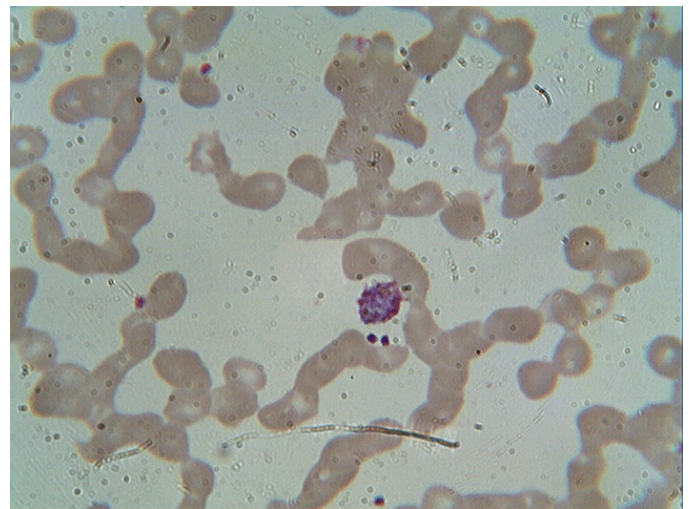


Figure 1: Diagram showing the schizonts of *P. vivax* in the peripheral blood smear.

diagnostic tools are available. Leptospirosis as such might be difficult to diagnose with or without malaria because of non-availability of diagnostic tests in resource limited settings. It is a common practice in a malaria-endemic area that if an acutely febrile patient is found to be malaria-positive, malaria is naturally assumed as the sole cause of the fever. Failure to recognize acute leptospirosis coinfection means a delay in the initiation of its proper therapy and possibly ensuing severe complications such as Weil's syndrome (jaundice and renal failure), pulmonary hemorrhage, and uveitis [11]. No severe complications were observed in our case. Case fatality rates of as high as 1–14% have been reported in hospital series [11, 12]. Presence of the causative agent, farming, poor sanitation and hygiene provide the substrate for the observed seasonal epidemics of leptospirosis. IgM ELISA antibodies become detectable by the end of first week and have replaced MAT (macro-agglutination test) for routine diagnosis because of the early seroconversion, availability of commercial bedside kits and excellent sensitivity and specificity [13].

Clinical case description for leptospirosis is characterized by fever, headache, chills, myalgia, conjunctival suffusion, and less frequently, meningitis, rash, jaundice, or renal insufficiency. Laboratory criteria for a confirmed diagnosis are: (1) the isolation of *Leptospira* from a clinical specimen, or (2) a four-fold or greater increase in *Leptospira* microagglutination titer between acute-phase and convalescent-phase serum specimens obtained two or more weeks apart and studied at the same laboratory, or (3) demonstration of *Leptospira* in a clinical specimen by immunofluorescence. Case classifications are: (1) probable: a clinically compatible case with supportive serologic findings (i.e., a *Leptospira* microagglutination titer ≥ 200 in one or more serum specimens) and (2) confirmed: a clinically compatible case that is laboratory confirmed [14].

Malarial infection is diagnosed by its classical pattern of fever supported by other signs and symptoms such as nausea/vomiting, dry cough, diarrhea, convulsions, shock also and pathologically by the detection of malarial parasites on thick and thin films of peripheral blood smear or by quantitative buffy coat test and the severity depends on the parasitic index. Its diagnosis is easy to make, even in the peripheries.

In our case, as the parasitemia cleared in less than 4 days of onset of illness, exchange transfusion was not contemplated. Exchange transfusion is indicated in cases of heavy parasitemia i.e., Parasitic Index > 10% as suggested by latest WHO guidelines and also immunocompromised patients not responding to the standard antimalarial treatment. And as our patient responded to antimalarials, we did not go for exchange transfusion. Drotrecogin alfa treatment has been shown to reduce mortality in patients with severe sepsis and has been approved for the treatment of patients with severe sepsis who have two or more organ dysfunction and/or APACHE II scores more than 25 [15], (our patient's APACHE II score was 9) and may have a role in complicated tropical infections as well. An improvement in respiratory function and more rapid resolution of cardiovascular dysfunction has been demonstrated. Most of these activities appear to involve the modulation of endothelial function, modulation of leukocyte activity, and improvement in microvascular perfusion in severe sepsis, thus improving organ function [16]. As our patient was a pregnant lady who can acquire the nosocomial infections early, Drotrecogin alfa was kept as a last resort for her. Because our patient responded to our standard treatment protocol for both these infections, drotrecogin alfa was not required and the patient recovered completely.

CONCLUSION

We hereby want to conclude that to diagnose and treat such mixed infections in pregnancy becomes a real challenge and so the correct interpretation of the clinical features and laboratory parameters helps the treating physician to raise the suspicion of mixed infection in the circumstances when the patient is not responding to the standard treatment for only mono-infection. The diagnosis and treatment of such infections at their earliest improves the outcome of the patients in the form of complete recovery.

Author Contributions

Sanket K Mahajan – Substantial contributions to conception and design, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Daanish A Chhapra – Substantial contributions to conception and design, Acquisition of data, Drafting the article, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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