Case Report

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Biochemistry Section

Co–Infection: Weil's Syndrome with Hepatitis B Infection- A Diagnostic and Therapeutic Hitch

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Abstract

Undifferentiated Acute Febrile Illness (AFI) is a common clinical syndrome among patients seeking hospital care. Detection of co-infections at the time of presentation is a diagnostic challenge, especially with limited laboratory support. Even if detected, early treatment and cure of these co-infections can be difficult for the clinicians. We are presenting a rare case of Hepatitis B and leptospirosis co-infection with high titres of *Salmonella paratyphi* A and scrub typhus. There are a few reports of leptospirosis in Hepatitis -B infected individuals but no generalization can be made due to limited data. Prompt and accurate serological diagnosis of multiple infectious agents have becomes mandatory in a healthcare set-up.

Key words: Concurrent infections, Leptospirosis, Hepatitis B infection, serological diagnosis.

CASE REPORT

A 48 -year -old female, resident of Kasargod, rural area in Dakshina Kannada,India, was admitted with complaints of high grade fever with chills, epigastric pain and cough with expectoration since 2 weeks and oliguria since 2 days. General examination revealed fever, icterus, conjunctival suffusion, pedal edema and facial puffiness. On systemic examination, there was diffuse tenderness and guarding over the abdomen, bilateral coarse crepitations over the chest region. Abdominal ultrasound revealed hepatomegaly, bulky spleen and right basal consolidation. X-Ray findings of chest were suggestive of pulmonary haemorrhage. Blood investigations were within normal range. Blood and urine cultures were sterile. RA factor was 376IU/ml, ASO titre was 202.3IU/ml, ESR- 51mm.

The patient was shifted to intensive care unit after two days of admission in the view of decreasing renal functions, tachypnoea and metabolic acidosis. Peripheral smear for malaria and for serology for dengue were negative. Patient was reactive for HBsAg by both rapid screening and ELISA (HEPLISA J.Mitra Company Ltd India).

Widal test was positive for *Salmonella Paratyphi* A with AH titre of 1:160 and 1:80 on day 2 and day 10 respectively. She received injection of Ceftriaxone. Dark field microscopy on urine specimen was positive for leptospira and was confirmed by anti-Lepto IgM ELISA (Panbio, Inverness Medicals, Australia) showing 22 Units on day 5 of admission. Crystalline Penicillin 1.5 lakh units 6 hourly along with Tab. Doxycycline 100mg was continued for one week,12 hourly. However, anti-leptospira IgM ELISA still showed an increased value of 53 units.

Weil's Felix test revealed agglutination with OX-K antigen with a titre-1:160. Blood picture showed thrombocytopenia with deranged mechanism of coagulation. On day 7 haemoglobin-8.4g%, total counts- 24,800/cmm, platelet- 24,000/cmm, PT INR- 1.8, blood urea 96mg%, creatinine 3.4mg% and liver function tests were; bilirubin 5.6mg%, AST-266 IU, ALT-147IU, ALP-455 IU. She received 6 units of platelets and 4 units fresh frozen plasma, underwent hemodialysis twice and was later put on ventilator assisted respiration due to respiratory distress. After 1 month of admission, the patient expired due to renal failure.

DISCUSSION

Water borne infections like typhoid and leptospirosis are a result of poor sanitation with a high prevalence in the Southern tropical part of India. Certain studies have shown the co-existence of Hepatitis B and Weil's disease[1,2]. Studies also reveal that leptospiral illness may be a significant component in cases of dual infections or in simultaneous infections with more than two pathogens [3]. However, there still remains a diagnostic dilemma whether clinical manifestations are due to hepatitis or a feature of leptospirosis. Cross reaction can lead to other false positive serological tests which need to be confirmed by history, clinical features and specific confirmatory tests.

Leptospirosis is a zoonotic biphasic illness, taking a fulminant course with rapid onset of hepatic and renal failure and high mortality [3-5].High index of suspicion for leptospirosis should be made in patients of rural background due to contact with animals and water contaminated with urine of rodents [4].

Our patient also had Hepatitis B infection. It is unknown whether this represents reactivation of a carrier state or a recent acute infection. It is likely that dual infection in our patient represents a chance of occurrence between a rare (Leptospira) and a common (Hepatitis B) infectious agent, as they have different modes of acquisition. It is apparent from this case that clinicians need to be aware that on rare occasions causes of jaundice may co-exist with commoner causes [1].

Unusual clinical manifestations of leptospirosis may result from involvement of pulmonary, cardiovascular, neural, gastrointestinal, ocular and other systems [3].In recent years, severe pulmonary haemorrhage has increasingly becomes an important manifestation of leptospiral infection [5].Acute Respiratory Distress Syndrome (ARDS) in leptospirosis is more commonly seen with spontaneous pulmonary haemorrhage syndrome and is managed with National Institute Of Health (NIH) protocols [6].

The clinical course and pathology of leptospirosis suggests an underlying immunopathogenic process and Jarisch-Herxheimer reaction [7]. This reaction occurs when large quantities of toxins are released into the body as bacteria dies during antibiotic treatment. Release of endotoxins associated with the death of bacteria occurs faster than the removal of the

toxins by the body. Thus, Weil's disease is a classic model of sepsis and hence, there is a pathophysiological reason for therapeutic plasma exchange to extract excess of bacterial products and inflammatory mediators [8].

The clinical manifestations of leptospirosis and scrub typhus can be nonspecific and both can cause fever, headache, skin rash, myalgia and conjunctival suffusion. In severe cases, both diseases evolve, eventually leading to multiple organ dysfunctions, including pneumonitis, encephalitis, myocarditis, acute renal failure, hepatitis, and disseminated intravascular coagulation. Both illnesses are potentially fatal, if not treated early [9]. Physicians in endemic areas should, therefore, be vigilant for the possibility of dual infection and start treatment early if exposure history is suggestive of either leptospirosis or scrub typhus. However, this area of Karnataka state,India is not known to be endemic for scrub typhus and high chances of cross reactivity in this case can lead to a false positive result. Absence of increasing titres and inability to isolate the organism from repeated blood cultures rules out the true existence of paratyphi A as a cause of febrile illness.

Simultaneous, multiple infections in an individual is a well-acknowledged fact in today's world as a result of the HIV/AIDS pandemic; however, such diagnosis is still uncommon in immunocompetent individuals [2].Concomitant Hepatitis-B infection and leptospirosis have not been occasionally reported. Further studies are needed to clarify, whether this apparently rare coinfection is actually more common but under diagnosed due to lack of clinical suspicion.

The following study prompts the importance of rapid and accurate serological testing and use of specific tests in cases of AFI with multiple causative pathogens to decrease the mortality from the same.

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