International Journal of Medical and Health Research
ISSN: 2454-9142
www.medicalsciencejournal.com
Volume 1; Issue 5; December 2015; Page No. 07-09

A college student with fever and reflective jaundice: A case report

[1] Prabhusaran N, [2] Sundhararajan A, [3]Asirwatham Alwin Robert, [4] Syed Mohideen, [5] Natarajaseenivasan K, [6] Joseph PID

[1] Postgraduate and Research Department of Microbiology, Chennai Medical College Hospital and Research Centre (SRM Group), Tiruchirapalli, India; D.Sc Research Scholar in Medical Microbiology, The Tamilnadu Dr. M.G.R. Medical University, Chennai.

[2] Postgraduate and Department of Biochemistry, Chennai Medical College Hospital and Research Centre (SRM Group), Tiruchirapalli, India

[3] Department of Endocrinology and Diabetes, Prince Sultan Military Medical City, Riyadh, Kingdom of Saudi Arabia

[4] Department of Laboratory Medicine, Team Speciality Hospital, Pudukkottai, India

[5] Department of Microbiology, School of Life Sciences, Bharathidasan University, Tiruchirapalli, India

[6] Department of Microbiology, Karpaga Vinayaga Institute of Medical Sciences, Maduranthagam, Kancheepuram, India

Abstract
A 19 year old male student resides in Pudukkottai town of India and studying in private college nearby presented with high grade intermittent fever, abdomen pain for 3 days, yellow coloration of the eyes and dark yellow irritated urination for two days. On interview, no history of surgery or hospital admission of transfusion identified. No history of travel and contact with animals. On examination he appeared acutely ill, icteric and severe febrile (40.2 ºC). No observation of rashes or lymphadenopathy. The liver tenderness of about 15cms was identified. Elevated liver markers identified but serum urea level is normal. CBC determined thrombocytopenia and leucopenia especially neutropenia noted. HIV screening was non-reactive and urine bacteriology showed negative. Further, the febrile state was identified with the knowledge of medical scientist as leptospirosis by ELISA, MAT and EMJH culturing. Then the patient was admitted and benzyl penicillin 1.5 million units IV and Doxycycline 100mg PO bid was given to patient; further Jarisch-herzheimer reactions reported then the patient was administered with intravenous Ceftriaxone. He recovered completely and dehospitalized on 6th day admission.

Keywords: Febrile illness, Jaundice, leptospirosis

Introduction

Leptospirosis is an important public health problem caused by the pathogenic spirochete *Leptospira interrogans* and found more and frequent infections in the developing countries like India. The disease is being increasingly reported in children and adolescents due to exposure to various environmental contaminations in recent times [1]. The high level of exposure among the children results in high infection rates and because they have less previous exposure than adults, they do not have sufficient protection to resist clinical illness during outbreaks. The preponderance of patients evident a mild, anicteric febrile illness, but a minority of patients develop a severe form with multiorgan involvement and referred as Weil's disease [2]. This is characterized by multisystem dysfunction and can present with high fever, significant jaundice, renal failure, hepatic necrosis, pulmonary involvement, cardiovascular collapse, neurologic changes, hemorrhagic diathesis and further multi organ failure occur [3].

There was no evidence of a difference in prevalence of leptospirosis between urban and rural schools or between junior and secondary age ranges [2, 3]. Further the investigators have certain thoughts that there may be the differences in the incidence of disease and clinical manifestation's spectrum among pediatric and adult patients due to leptospirosis and it is still not well described. The specific data related to infection observed in the childhood infections are limited and no previous studies described the comparativeness among various patients. Some studies highlighted the limit of exposures to the environmental contaminations among the subjects [4, 5]. We report a case of leptospirosis infection that was encountered in a 19 year old young male who acquired this infection from an unidentified source in a non-endemic leptospirosis region in Pudukkottai, Tamilnadu, India.

Case presentation

A 19 year old male college student living in the hostel of private engineering college in Pudukkottai city of Tamilnadu presented to the emergency department with five days history of fever, headache, myalgia, arthralgia, abdominal pain and yellow discoloration of urine and eyes for one day. The observation of fever was high and closely associated with chills, rigors, anorexia, malaise, sore throat and a rare observation in the leptospiral cases – throbbing headache. No previous record of hospital admission, surgery and other infectious diseases. He is very rarely travelling to his home town and other places, no animal contact and even no determination of ingestion of contaminated of unhygienic water or food.

A critical observation was the patient played with his friends in the recent rain and exposed high in the stagnant water (mudded water). He also observed the rats and bandicoots also playing in the edge of the mudded water and identified those are entered into the ditches. He denied providing information that no such illness he experienced previously. He is teetotaler and always been in good health. He was further admitted to the super speciality centre of the same primary care centre after

initial resuscitation and clinical investigations. While examining the patient, he appeared acute ill, deeply icteric, febrile (40.2 ^{o}C) and no lymphadenopathy and rashes observed. The liver investigation showed tendered liver without any localized tenderness and Murphy's sign. Tachycardia of 129 beats per minute was recorded and further other systems are observed normal. Liver function test was also observed in abnormal state thereby total bilirubin, conjugated bilirubin etc get elevated (Table 1).

Table 1: Determination of serum biochemistry and Complete blood count

Biomarker	Normal value	Patient's value
Liver biomarkers		
Total bilirubin	3.4 – 17 µmol/ L	117.6 µmol/ L
Conjugated bilirubin	1 – 8 µmol/ L	73.4 µmol/ L
Alkaline phosphatase	21 – 92 IU/ L	129 IU/ L
Alanine transaminase	1 – 40 IU/ L	86 IU/L
Aspartate transaminase	1 – 40 IU/ L	84 IU/ L
Electrolytes		
Sodium	135 – 147 mmol/ L	153 mmol/ L
Potassium	3.5 – 5.2 mmol/ L	2.6 mmol/ L
Creatinine	72 – 126 mmol/ L	212 mmol/ L
Urea	2.5 – 6.6 mmol/ L	2.9 mmol/ L
Complete blood count		
Haemoglobin	13.5 – 16.5 g/ dL	9.3 g/ dL
Total white cell count	2.5 – 11 X 10^3 /µL	11.5 X 10^3 /µL
Neutrophilia	50 – 60%	84%
Platelets	90 – 400 X 10^3 /µL	78 X 10^3 /µL

The random blood sugar and clotting profile were within normal limits, while HIV ELISA screening was non-reactive and urine culture and microscopy showed isolation of E. coli and abnormal pus cells respectively. An additional diagnosis of complete urine analysis, blood cultures and smear microscopy showed elevated urea and creatinine, blood culture showed negative to routine but Dinger's ring was observed and negative malarial smear respectively.

Discussion

One case of 19 years hospitalized with confirmed leptospirosis was reported. The necessity for respecting a rigorous chronological order when requesting complementary examinations, which could confirm the diagnosis, is stressed [6]. Domestic animals, team-mates and swimming at week-ends or during holidays are the potential sources of infection in the young; the determination of leptospirosis in the animals and evaluation of carrier status are necessary to improve the public health [7]. This justifies searching for leptospirosis in cases of unexplained fever, a pseudo-influenza syndrome, a meningitis which is mainly of the lymphocytic type, or more rarely, in cases of jaundice. Leptospirosis should always be a suspectful disease among clinicians when pyrexia of unknown (PUO) origin cases identified [8].

The involvement of liver presents with tender hepatomegaly and jaundice are highly dangerous where the cases of jaundice are accentuated by additional haemolytic component [3, 6, 8]. In this stage, the observation of increased bilirubin levels are common at the same time, the liver levels liver enzymes are also normal. A wonderful clue is the observation of raised serum bilirubin level with normal aminotransferases suggestive of leptospirosis rather than hepatitis. Further the presence of coexisting clinical manifestations including acute respiratory disorders syndrome (ARDS), myocarditis, rhabdomyolysis, thrombocytopenia, hemorrhage into the skin and vital organs, conjunctivitis and uveitis can also point to the diagnosis of leptospirosis [8].

Some studies highlighted the observation of characteristic conjunctival suffusion very often with uveitis, severe muscle tenderness and nonoliguric renal failure with hypokalemia are other clinical clues to the diagnosis. In severe cases, oliguric renal failure was observed [9]. Very rarely patient may develop encephalitis and recuperation from meningitis or encephalitis may be protracted and engross periods of physical, muscle weakness and mental fatigue for months, thus in more cases it may give a false implication of hepatic encephalopathy. Diagnosis is made with serology with the microscopic agglutination test (MAT) as the gold standard with either a fourfold rise in titres or a single titre of >1:800 being diagnostic; this many help to elucidate the epidemiology of leptospirosis in the region [10, 11].

From this case study, it was clearly noted that the wide range of clinical signs and symptoms associated with possible, acute leptospiral infections contribute to the probable of significant underreporting. Further, the rule out procedures of other leptospirosis related diseases are also quite to be standardized in every health care institution in order to avoid the entry of PUO even in dehospitalization (discharge) summary. By this case study, the authors emphasize the importance of considering leptospirosis as an important differential diagnosis of dengue, Japanese encephalitis, pyogenic meningitis and cerebral malaria, especially in endemic areas with seasonal prevalence. Through this study, some factors contribute to the underdiagnosis of leptospirosis that provided significant consequences in the diagnosis and prompt treatment of the disease.

- It can present as other diseases such as aseptic viral meningitis
- Non availability of appropriate diagnostic tools
- Serological and immunological tests are rarely performed at the early stages of the disease and
- The indiscriminate use of antibiotics has decreased the likelihood of obtaining an isolate.

Early diagnosis of leptospirosis using MAT with appropriate and maximum serovars is mandatory, as effective and specific treatment is available and some complicated sequelae are unusual including multiorgan failure - pulmonary (ARDS), neurological and renal. Even though we cannot resolve in this case whether both treatments were mandatory lifesaving procedures, the therapeutic approach discussed in leptospirosis, multiple organ failure and obdurate septic shock may be observed intensely.

References

1. Vijayachari P, Sugunan AP, Murhekar MV, Sharma S, Sehgal SC. Leptospirosis among school children of the Andaman & Nicobar Islands, India: low levels of morbidity and mortality among pre-exposed children during an epidemic. Epidemiology and Infection. 2004; 132:1115-1120.
2. Everard CO, Hayes RJ, Edwards CN. Leptospiral infection in school children from Trinidad and Barbados. Epidemiology and Infection. 1989; 103:143-156.
3. Daher EF, Vieira APF, Jacinto CN, Lima RSA, Girao MMV, Fernandes ATBM *et al.* Differences among children, adolescents and adults with severe leptospirosis: a comparative analysis. Indian Journal of Nephrology. 2014; 24:166-170.
4. Adler B, Moctezuma PA. Leptospira and leptospirosis. Veterinary Microbiology. 2010; 140:287-296.
5. Miyazato KE, Fonseca AL, Caputto LZ, Rocha KC, Azzalis LA, Junqueira VB. Incidence of leptospirosis infection in the East zone of Sao Paulo city, Brazil. International Archives of Medicine. 2013; 6:23-29.
6. Laras K, Cao BV, Bounlu K, Nquyen TK, Olson JG, Thonqchanh S *et al.* The importance of leptospirosis in Southeast Asia. American Journal of Tropical Medicine and Hygiene. 2002; 67:278-86.
7. Gamage CD, Koisumi N, Muto M, Nwafor OC, Kurukurusuriya S, Rajapakse JR *et al.* Prevalence and carrier status of leptospirosis in small holder dairy cattle and peridomestic rodents in Kandy, Sri Lanka. Vector Borne Zoonotic Diseases. 2011; 11:1041-7.
8. Chabrolle JP, Derrida S, Mailloux M, Rossier A. Leptospirosis in children: a not infrequent disease. Sem Hop. 1979; 55:601-607.
9. Herath NJ, Kularatne SA, Weerakoon KG, Wazil A, Subasinghe N, Ratnatunga NV. Long term outcome of acute kidney injury due to leptospirosis? A longitudinal study in Sri Lanka. BMC Research Notes. 2014; 7:398-402.
10. Koizume N, Gamage CD, Muto M, Kularatne SA, Budagoda BD, Rajapakse RP *et al.* Serological and genetic analysis of leptospirosis in patients with ac ute febrile illness in Kandy, Sri Lanka. Japanese Journal of Infectious Diseases. 2009; 62:474-5.
11. Natarjaseenivasan K, Prabhu N, Selvanayaki K, Raja SSS, Ratnam S. Human leptospirosis in Erode, South India: Serology, isolation and characterization of the isolates by Randomly amplified polymorphic DNA (RAPD) fingerprinting. Japanese Journal of Infectious Diseases. 2004; 57:193-197.