Leptospirosis: case-series report in a prison of the coast in Ecuador

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ABSTRACT

We describe the cases of two patients with fever initially diagnosed as dengue and urinary tract infection. The patients were inmates of the same prison and were in contact with stagnant drinking water, which is considered to be the likely site of contamination, about 2 weeks before the onset of the symptoms during the carnival celebrations. The time between the hospital admission and suspected leptospirosis (and starting specific treatment) was four days for the patient in case 1 and two days for case 2; between admission and laboratory diagnostic confirmation was ten days for case 1 and four days for case 2. We conclude that Leptospirosis is not considered as an option in the initial differential diagnosis but only after ruling out other pathologies.

Keywords: Leptospirosis; Zoonoses; Dengue; Infection; Fever; Jaundice; Thrombocytopenia; Diagnosis, Differential ; Prisons.

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INTRODUCTION

Leptospirosis is a worldwide widespread zoonosis, caused by pathogenic spirochetes of the genus *Leptospira*; humans are infected incidentally [1] after exposure to contaminated water, soil or animal urine, mostly rats, which are the most important reservoirs for maintaining transmission in most settings (although many other animals are also involved in the transmission of the disease such as other rodents, domestic animals such as dogs, cats, swine and livestock such as sheep and horses[2]). The disease can affect any exposed individual although it is more prevalent among young males mainly due to their working or recreational activities and during months in the rainy season.

Leptospirosis is an under-reported disease, and there are no reliable global incidence figures. Yet it is estimated that severe cases (hospital reports) range between 300,000 and 500,000 and fatality rates in such cases range between 5% and 20%[3].

Classically two types of clinical presentations have been described (an anicteric form and an icteric- hemorrhagic one)[4-5]. Yet the clinical course of leptospirosis is variable with multiple symptoms and signs, and there is no characteristic clinical presentation[6]. Therefore, icteric patients with a benign course without kidney failure[7] may be found; moreover "routine" testing may show a great amount of disorders[8-9] which complicates differential diagnosis. Therefore clinical suspicion must be confirmed by specific laboratory tests[10], mostly ELISA and MAT (microscopic agglutination test)[11-13]. Leptospirosis must be considered in the differential diagnosis of acute febrile illness together with a great variety of diseases such as dengue, hepatitis, HIV, malaria, pyelonephritis, Hantaviruses, meningitis, rickettsiosis, etc.[6]

Treatment must be initiated within the first seven days after the onset of symptoms and recommended treatment includes the family of β-lactam antibiotics (doxycycline, crystalline penicillin, ampicillin, amoxicillin)[9, 12] although the use of cephalosporins such as ceftriaxone or cefotaxime[1, 14] has also been described.

The main objective of this study is to describe the cases of leptospirosis diagnosed within our facility

and to outline the importance of including this disease in the differential diagnoses of more prevalent diseases such as dengue.

METHODOLOGY

Throughout April 2012 a case-series report was carried out by means of the revision of clinical records of patients who were admitted to the hospital of Jipijapa, in the province of Manabí in Ecuador only within a three- day period with a feverish condition initially diagnosed as dengue and urinary tract infection. The cases reported were the only two cases diagnosed in this hospital throughout 2012.

RESULTS

CASE 1: male patient, 25 years old, admitted to hospital after a three-day long clinical course of malaise, fever, chills, dysuria, abdominal pain and vomiting. Upon examination, the patient refers upper and lower abdominal pain, as well as bilateral flank pain. Initial laboratory tests report leukocytosis (14420/mm^3, 93% neutrophils) and thrombocytopenia (47000/mm^3) in the complete blood count (BC) and rapid and microscopic urine tests reported leukocytes 30-40/c and bacteria+. The patient was admitted to hospital with the diagnosis of pyelonephritis and treatment was initiated with intravenous ampicillin and gentamicin. Three days later, the patient referred headache and myalgia, the blood count reported a normal leukocyte count (8710/mm^3) and thrombocytopenia had gotten worse (21000/mm^3), thus being diagnosed as pyelonephritis and dengue. On the following day (fourth day of hospitalization) the patient was found to be icteric and so, liver function tests together with tests for viral hepatitis, malaria, HIV and leptospirosis are requested. The initial results were: TGO (AST) 48 UI/l, TGP (ALT) 45 UI/l, total bilirubin 10,0 mg/dl, direct bilirubin 6,30 mg/dl, indirect bilirubin 3,70 mg/dl, negative for hepatitis, malaria and HIV, on account of what, leptospirosis was considered as the presumption diagnosis and intravenous (IV) treatment with ampicillin continued together with symptomatic medication. The confirmation arrived five days later (positive ELISA test for IgM against Leptospira).

CASE2: male patient, 35 years old, admitted to hospital after a seven-day long clinical course of malaise, fever, chills, arthralgia, headache, pain behind his eyes, vomiting, diarrhea and jaundice (the later of undetermined duration). Upon examination, there is lower abdominal pain. The laboratory reports normal leukocyte count, anemia, slight thrombocytopenia and microscopic urine test concludes: bacteria ++, leukocytes 5-8/c and granular casts 2-4/c. He was admitted to hospital under the diagnosis of dengue and urinary tract infection and treatment was initiated with ampicillin and gentamicin. The following day, the doctor in charge decided to discontinue treatment and requested liver function tests (total bilirubin 32,32 mg/dl, direct bilirubin 8,34 mg/dl, indirect bilirubin 23,98 mg/dl), viral hepatitis (negative), malaria (negative), HIV (negative) and thus, serological tests for leptospirosis were requested and empirical treatment with IV ampicillin was initiated. The diagnosis was confirmed on the fourth day of hospitalization (positive ELISA for IgM against *Leptospira*).

Both patients were deprived from freedom in the same prison (which are called "social rehabilitation facilities" in Ecuador) and had been in contact with (bathing and immersion, repeated exposure) the same standing freshwater pond approximately two weeks before the onset of symptoms, during the Carnival celebrations (which in our country last for about four days and during which playing with water is very common). That was therefore considered the probable site of contamination, a fact which was reported by a member of one of the patient's family and which had not been previously reported by neither of the patients nor had it been researched by healthcare professionals prior to the suspicion of leptospirosis.

As far as the evolution of patients is considered, it could not be fully assessed since on the fifth day of hospitalization and upon a "threat of flight" the patients were taken back to the correctional facility by the security staff in charge of the patients in the hospital and treatment was completed in an outpatient regimen in the prison's nursery. Subsequent controls were undertaken by the facility's medical staff as well as by members of the Epidemiology Department of the Provincial Directorate of Health.

DISCUSSION

The appropriate identification of this pathology when clinical manifestations are globally evaluated, in consideration of laboratory reports and a history of environmental exposure allow the initiation of the convenient specific treatment.

As in many other reports, in our environment leptospirosis is not considered in the initial differential diagnosis but after excluding other pathologies[5-6]. In both cases jaundice was present with a benign clinical course, as it had been previously reported[7]. Moreover,

in these patients the prevention of exposure to the risk factor (standing freshwater) was not feasible since it was an easy opportunity to "enjoy the celebration of carnival" in a place where normally they would have not been able to do so.

After reporting the cases to both local and provincial health authorities, the corresponding epidemiological study was carried out although we still do not know its specific aspects and whether the environmental study of the water where the patients were probably infected was carried out or not, since according to the reports of the patients and their relatives, by the time they had been admitted to hospital, the pond had been already eliminated.

We do not know if any other people were exposed and infected with leptospirosis in the general population, with reference to the same exposure to water during the celebration of carnival in the same region. The rest of cases reported in the province had nothing to do with this exposure.

There are dozens of press reports on leptospirosis cases in correctional facilities in many countries, yet after an advanced search we have only found a scientific report from a correctional facility in Mexico [15] with similar features regarding the incubation period and clinical manifestations reported and different diagnostic tests (MAT in that study, ELISA in ours) and treatment (penicillin/doxycycline in the Mexican study and ampicillin in ours).

As to avoid new cases of infectious diseases such as leptospirosis there should be a program of improved sanitary conditions such as the elimination of rodents and hygiene control of water[2] in correctional facilities.

There is still controversy among authors on whether antibiotic treatment should be prescribed over a week after the onset of symptoms since the symptoms and signs would then be secondary to immunological mechanisms and not to the infectious agent (bacteria)[9].

CORRESPONDENCE

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BIBLIOGRAPHICAL REFERENCE

1. De Igartúa E, Coutiño M, Velasco O. Revisión Breve de Leptospirosis en México. Altepepaktli. 2005; 1: 52-8.
2. Manet L, Rivera V, Ropero E, Zayas G, Infante S. Características clinicoepidemiológicas y microbiológicas de pacientes con leptospirosis. Medisan. 2011; 15: 43-9.
3. Hartskeerl R. International Leptospirosis Society: objectives and achievements. Rev Cubana Med Trop. 2005; 57: 7-10.
4. Vado I, Cárdenas M, Laviada H, Vargas F, Jiménez B, Zavala J. Estudio de casos clínicos e incidencia de leptospirosis humana en el estado de Yucatán, México durante el período 1998 a 2000. Rev Biomed. 2002; 13: 157-64
5. Rodríguez B, Gómez H, Pérez B, Cruz R. Diagnóstico y tratamiento de la leptospirosis humana. Rev Cubana Med Gen Integr. 2001; 17: 68-73.
6. OMS. Leptospirosis humana: guía para el diagnóstico, vigilancia y control; traducción del Centro Panamericano de Fiebre Aftosa. Rio de Janeiro: Centro Panamericano de Fiebre Aftosa; 2008.
7. Blas J, González J, Márquez M. Leptospirosis: zoonosis emergente. Informe de un caso. Med Int Mex. 2007; 23: 244-7.
8. Jibaja E, Almeida G, Mena M, Acosta M, Acosta J, Pazmiño L. Leptospirosis. Rev Ecuat Med Crít [Internet]. 2000 [citado 2013 En 20]; 1: 94-8. Disponible en: http://www.medicosecuador.com/medicina_critica/rev_vol1_num1/leptospirosis.html
9. Rivero S, Rago M. Leptospirosis: revisión del tema a propósito de dos casos. Biomedicina. 2011; 6: 38-49.
10. Agudelo P, Restrepo M, Moreno N. Diagnóstico de leptospirosis de muestras de sangre y cultivo por observación en microscopio de campo oscuro. Biomédica. 2008; 28: 7-9.
11. Vanasco N, Lottersberger J, Schmeling M, Gardner I, Tarabla H. Diagnóstico de leptospirosis: evaluación de un enzimoinmunoensayo en fase sólida en diferentes etapas de la enfermedad. Rev Panam Salud Pública. 2007; 21: 388-95.
12. Abuauad C, Osorio G, Rojas J, Pino L. Leptospirosis: Presentación de una infección fulminante y revisión de la literatura. Rev Chil Infect. 2005; 22: 93-7.
13. Agudelo P. Leptospirosis: diagnóstico serológico. Rev CES Med. 2005; 19: 37-41.
14. Zunino N, Pizarro R. Leptospirosis. Puesta al día. Rev Chil Infect. 2007; 24: 220-6.
15. Arias V. Leptospirosis en el Estado de Tabasco. Estudio de brote en un centro penitenciario, 2010. Revista de la Facultad de Medicina de la UNAM. 2011; 54: 4-9.