Seroprevalence of Leptospirosis in North of Iran During 2010

Behzad Esfandiari, Mohammad Reza Youssefi and Mehdi Asmar

Head of Pasteur Institute of Iran-Amol Research Center
Departments of Veterinary Parasitology, Islamic Azad University, Babol, Branch Iran
Departments of Parasitology, Pasteur institute of Iran

Abstract: Leptospirosis is a globally important zoonotic disease, most commonly founded in tropical or sub-tropical countries. Leptospirosis is an acute febrile illness caused by pathogenic members of the genus Leptospira. The present study was done to evaluate the prevalence and other variables related to Leptospirosis in Mazandaran province (north of Iran) during 2010. Blood samples were collected from all suspected cases to measure anti-leptospira antibody by Immuno-Fluorescence Antibody (IFA) method (manufactured by Pasteur Institute, Iran). During this period, incidence in men was 27.29% and in women was 28%. Regarding location of residence, 135 (71.42%) were in rural areas and 54 (28.58%) were in urban areas. Recent studies on Leptospirosis showed that the disease was highly endemic in the animal population. It is considered that the majority of leptospirosis cases in man were due to association of man with animals and disease-infected environment.

Key words: Leptospirosis • Zoonotic • Immuno-Fluorescence Antibody (IFA) • Mazandaran • Iran

INTRODUCTION

Leptospirosis is a globally important zoonotic disease, most commonly founded in tropical or sub-tropical countries and may be prevalent in both urban and rural settings. Annual incidence is estimated from 0.1-1 per 100,000 in temperate climates to 10-100 per 100,000 in the humid tropics [1]. Leptospirosis is an acute febrile illness caused by pathogenic members of the genus Leptospira. This disease has a worldwide distribution but is most common in tropical regions, including north of Iran [2]. The genus Leptospira contains at least 18 species classified on the basis of DNA relatedness and more than 300 serovars based on agglutinating LPS antigens [3].

Approximately half of the pathogenic serovars belong to L.interrogans or L.borgpetersenii. Saprophytic species such as L. biflexa occurs in the environment but plays no role in disease [4].

Rodents and domestic mammals, such as cattle, pigs and dogs, serve as major reservoir hosts, but Leptospira has been isolated from virtually all mammalian species [5]. Infected animals may excrete leptospira intermittently or regularly for months or years, or for their lifetime [6].

Vaccinated animals may still shed infectious organisms in the urine. Human infection results from direct or indirect exposure to the urine of carrier animals. Leptospira gain entry in to the blood stream via cuts, skin abrasions or mucous membranes [7]. Leptospirosis has often been considered as an occupational disease, but recreational activities and traveling in endemic countries are also recognized as risk factors [8]. The present study was done to evaluate the prevalence and other variables related to leptospirosis in Mazandaran province (north of Iran) during 2010.

MATERIAL AND METHOD

The present study was a descriptive retrospective study of all cases of leptospirosis that diagnosed and confirmed to have the disease during 2010 in Mazandaran (north of Iran). Hospitalized cases with clinical symptoms including fever, severe headache, myalgias, conjunctival suffusion, jaundice, general malaise and joint pain as well as having positive history of working in farm or contact with animals, regarded as suspected patients of leptospirosis, by a physician in all hospitals of Mazandaran Province. The mentioned symptoms are
One blood samples were obtained from all suspected cases to measure anti-leptospira antibody by Immuno-Fluorescence Antibody (IFA) method with a kit manufactured by Pasteur Institute, Branch of Iran. (With antigen: *Leptospira biflexa* serovar *patoc 1* strain in Korthof’s medium) All blood samples were sent to Pasteur Leptospira Laboratory in Amol, Mazandaran, Iran. Confirmed cases had clinically compatible symptoms and at least one of the following criteria: a single anti-leptospira antibody titer greater than 1:100, a four-fold or higher increase in anti-leptospira antibody titer between the first and the second serum specimen (with at least 15 days interval), or conversion from negative titer to positive in the second versus the first serum specimen. For each confirmed case epidemiological data were obtained using a form filled out by the physician requested the laboratory test. The questionnaire included personal data (age, gender, profession and place of residence), source of drinking water, date of symptoms development and date of admission to the hospital. Data collected from these hospitals were analyzed with Z-test and SPSS statistical software.

### RESULTS

During January to December 2010, 688 *Leptospirosis* suspected sera were sent to *Leptospirosis* diagnosis center in Amol city from all over Mazandaran province. 149 (27.47%) samples were diagnosed to be affected to *Leptospirosis*. During this period, incidence in men was 27.29 % and in women was 28 %; the difference was not statistically significant (P > 0.05).

Regarding location of residence, 135(71.42%) were in rural areas and 54 (28.58%) were in urban areas. This parameter after statistical analyses was shown to be statistically significant (p<0.01) (Table 1).

Patients regarding occupational status and age were analyzed. According to occupational status, highest incidence rate was in farmers (77.77%) and according to age most patients were 41-60 years old range, that was 49.28% in male and 51.02% in female (Table 1 and Figure 1).

<table>
<thead>
<tr>
<th>Samples</th>
<th>Number of samples</th>
<th>Number of patients</th>
<th>Number of patients based on occupational status</th>
<th>Place of residence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>688</td>
<td>513</td>
<td>175</td>
<td>140</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>(100%)</td>
<td>(74.56%)</td>
<td>(25.44%)</td>
<td>(27.29%)</td>
</tr>
</tbody>
</table>
of a highly virulent clone. A recent seroprevalence study at a hospital on the Thai-Myanmar border revealed that 17% of patients who sought treatment for fever were diagnosed with leptospirosis [13, 14]. For the year 2008, the total number of notifications for Australia was 112 cases. This is the lowest number of reported cases in over ten years and represents a downward trend since a peak in 1999 [4]. In the North of Iran most of patients are males who live in rural area and work in rice farms and due to different tasks in farming, men are more vulnerable to skin scratches and infection than women [6, 7]. Also Mazandaran province has mild wet climate that facilitates the prevalence of leptospirosis in the region. Aim of this study was to get to know Leptospirosis in Mazandaran better and because of regional and climate condition of Mazandaran and due to incidence of this disease it is suggested that physician in Mazandaran consider Leptospirosis as one of their choices in differential diagnosis in patients who refer to them with clinical signs which can be compatible with Leptospirosis. Our study suggests that more attention is needed to be paid by medical practitioners to febrile patients specially the patients who work in farms during summer season because the probable causative agent of Leptospira.

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REFERENCES