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Recrudescence of leptospirosis in French Polynesia in early 2010

Introduction

Leptospirosis, a disease found throughout the world, is caused by the bacteria *Leptospira interrogans*, a species that currently has 23 serogroups. People can be infected either directly through contact with infected animals, or indirectly through contact with water or other materials that have been contaminated by the urine of infected animals. The disease's incubation period is 10 days on average. Many clinical forms have been described, with renal involvement as one of the major characteristics. The case fatality rate can reach 5%. Laboratory diagnosis is based on direct diagnosis through genome or bacteria identification during the first five days of the illness by polymerase chain reaction (PCR), and indirect diagnosis after the fifth day by IgM type antibody identification. In French Polynesia, leptospirosis is a major endemic infectious disease.

This article describes cases of leptospirosis that occurred between 1 January and 21 May 2010 in French Polynesia by time, place and patient.

Materials and methods

The Bureau de veille sanitaire (Health Surveillance Office) within French Polynesia's Health Department has been conducting leptospirosis surveillance since 2007. It collects the report forms filled out by private-practice and hospital doctors (whenever they have a suspected case of leptospirosis) and laboratory test data from the Louis Malarde Institute and French Polynesia's hospital labs. Health Watch Office staff conduct a telephone investigation for each confirmed case in order to collect clinical, lab and epidemiological data. In particular, they look for exposure risk factors. A confirmed case is a patient for whom the bacteria has been found in culture or its genome by PCR, or who shows IgM seroconversion or a significant rise in the IgM index by a factor of 4.

Health Surveillance Office staff conducted a descriptive analysis of confirmed cases in May 2010, using EpiInfo software, version 3.3.2.

Results

Between 1 January and 21 May 2010, 81 confirmed cases of leptospirosis were recorded.

Sociodemographic characteristics

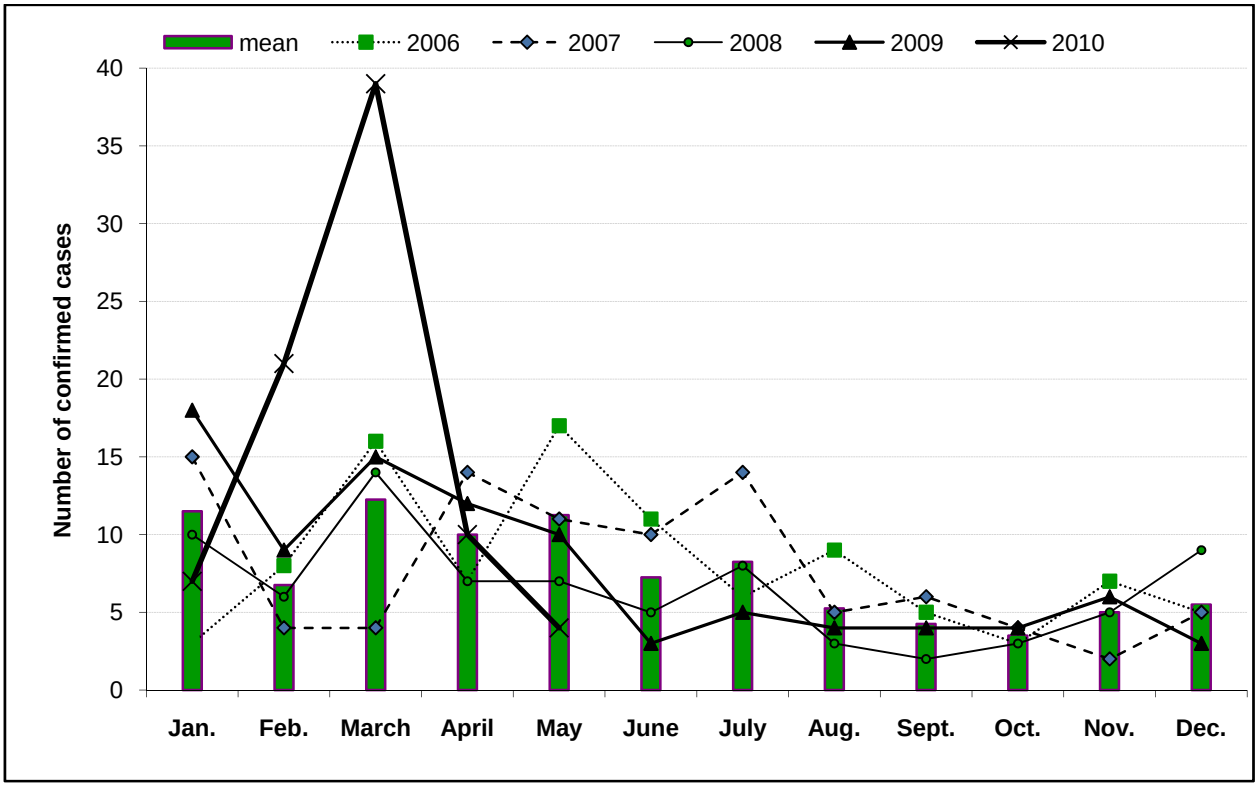
The male to female sex ratio was 3.05.

The mean age was 29.8 (standard deviation = 14.5 years), and half of all cases were under the age of 27. One-third of all cases were between the ages of 20 and 29. The youngest case was 6 years old and the oldest was 68.

Time and space distribution

Of the 81 confirmed cases, 7 were reported in January, 21 in February, 39 in March, 10 in April and 4 in May. The monthly distribution of cases in 2010 and for the previous four years is given in Figure 1.

In February, the number of confirmed cases sharply increased in French Polynesia, continuing through March, and exceeding the usual number of cases that occurred in previous years. This increase, noted during a period right after some unusual weather conditions (e.g. Cyclone Oli, heavy rains), led the Health Surveillance Office to quickly communicate with both the general public and health professionals. The latter were encouraged to get samples from any patient who had an acute high fever and diffuse pain syndrome[1] and to rapidly report confirmed cases. A press conference was held to raise community awareness. The rise noted in March 2010 was due, in part, to a better reporting of diagnosed leptospirosis cases.



Monthly distribution of confirmed cases of leptospirosis from 2006 to 2010.
Source: Health Watch Office, Health Department, French Polynesia

Most cases were from the Windward Islands (67%), with 43% of these from Tahiti. In total, 23 cases (30%) were from the Leeward Islands, with 13% from Raiatea. Two cases were from the Marquesas.

[1] The cost of the PCR test was covered by the Health Department.

Clinical and treatment characteristics

Clinical signs of leptospirosis are presented in the table below. All cases for which information was available had experienced fever, muscle pain and headaches.

Clinical signs	Number	Total responses	Percentage
Fever	42	42	100.0 %
Headaches	30	30	100.0 %
Muscle pains	42	42	100.0 %
Kidney problems	19	20	95.0 %
Jaundice	17	18	94.4 %
Eye problems	13	15	86.7 %
Lung problems	4	5	80.0 %
Haemorrhagic syndrome	7	9	77.8 %
Diarrhoea	4	18	22.2 %
Meningal syndrome	1	3	33.3 %

Half of all confirmed cases were hospitalised, including 18.6% in intensive care and a one-quarter of whom went to the emergency room. In total, 3 people (3.7%) died from leptospirosis after being hospitalised (1 in March, 1 in April and 1 in May).

Exposure factors

The confirmed cases were questioned about their possible exposure over the three weeks preceding the appearance of the disease (e.g. high-risk profession, contacts with fresh water).

Contacts with animals such as rats (40%) or domestic animals (60%) and walking barefoot in fresh water or mud (77%) were frequently reported exposure factors. Such contact could be linked to professional activities — such as with farmers (52.0%) or pig farmers (17.5%) — or recreational or semi-recreational activities such as swimming in a river (43.0%) and gardening (50.0%).

A presumed contamination site was identified by 31% of people with confirmed leptospirosis: 52% mentioned a specific river by name and 14% thought they had become infected in their *faapu*, (i.e. their farm fields or garden patch).

An analytical study of risk factors will be done at the end of 2010 in order to compare data with previous years.

Discussion

In late January 2010, tropical storms caused heavy rains and mud slides on many French Polynesian islands, particularly Tahiti. The occurrence of such phenomena is generally reported as being the cause for a recrudescence of leptospirosis in tropical countries and seems to have played a major role in the increase in reported cases that began in February and continued through to late March 2010 in French Polynesia. The total number of cases that occurred during the first quarter of 2010 was double the average of the four previous years. The geographic distribution of cases showed that the high islands in the Society and Marquesas groups were those most affected due to their geomorphology (i.e. they have valleys and rivers). In addition, the

individual exposure factors identified did not seem to differ from those of previous years (i.e. direct and prolonged contact with potentially infected water such as water from flooding rivers).

In early March, in this epidemiological context of increased risk of leptospirosis and given the lack of any other intercurrent outbreak, the Health Surveillance Office reminded the entire population of French Polynesia of measures to be taken: that is, to suspect leptospirosis as soon as a sudden high fever occurs with a diffuse pain syndrome (e.g.headache, muscle pain, joint pain), and to go to see a doctor. Awareness raising efforts also involved health professionals. These measures seem to have led to more systematic diagnosis and care.

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