

Legionnaires' disease Surveillance in Italy

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Abstract

In the report presented, data on legionellosis diagnosed in the year 2003 in Italy and notified to the National Surveillance System are analysed. Overall, 617 cases were notified, of which 517 were confirmed and 46 were presumptive.

The characteristics of the patients are very similar to those reported in the previous years in terms of male/female ratio, age-specific distribution, occupation, etc. *Legionella pneumophila* serogroup 1 was responsible for approximately 90% of the cases.

Introduction

The first outbreak of Legionnaires' disease (LD) was reported in Italy by Danish authors in 1978. They described three confirmed and seven presumptive cases, acquired by Danish tourists who stayed in a hotel located on Lake Garda.^[1] In 1980 another outbreak, with 23 cases and two deaths was notified amongst tourists who stayed at Lido di Savio (Ravenna). In 1981, other 18 cases of LD were identified from different accommodations located in Lido di Savio.^[2] Following these events, in 1983 the Italian Ministry of Health included legionellosis among statutory notifiable diseases.

At the same time, at the Istituto Superiore di Sanità (ISS), a National Surveillance System was established, and all legionellosis cases were registered. Subsequently, in 1993, the Ministry of Health confirmed the importance of legionellosis surveillance through the transmission of a special surveillance form, which recorded all the data referring to the patient, (age, sex, occupation, risk factors, etc.). The doctor who diagnoses a LD case should fill in the surveillance form accordingly and send it promptly to the Hygiene and Public Health Service of the Local Health Unit, to the Istituto Superiore di Sanità and to the Ministry of Health. Any suspected clinical strains that have been isolated must be sent to the Department of Infectious, Parasitic and Immune-mediated Diseases (MIPI) of the ISS, where the *Legionella* National Reference Laboratory is located, for typing or confirmation.

The aims of the Italian surveillance are:

- to monitor the frequency of legionellosis both from an epidemiological and a clinical/nosological point of view, paying particular attention to risk factors for acquiring the disease;
- to identify any variation in the trend of the disease;
- to rapidly identify outbreaks due to particular environmental conditions in order that immediate control measures for prevention of further cases can be taken and investigations into the source(s) of infection can be carried out.

Case definition

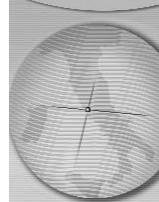
Confirmed case

An acute lower respiratory infection with focal signs of pneumonia revealed by clinical examination and/or a radiological evidence of pneumonia and one or more of the following events:

1. *Legionella* spp isolation from clinical samples (i.e. sputum, bronchial lavage fluid, lung biopsy, pericardial or pleural exudates, blood);
2. A fourfold or greater rise of antibody titre for *Legionella pneumophila* serogroup 1, detected by indirect immunofluorescence between two sera collected at the disease onset and at the seroconversion phase;
3. The detection of specific *Legionella* antigen in urine using validated reagents and methods.

Presumptive case

An acute lower respiratory infection with focal signs of pneumonia revealed by clinical examination



and/or a radiological evidence of pneumonia and one or more of the following events:

- 1 A fourfold rise of antibody titres for serogroups or species different from *Legionella pneumophila* serogroup 1, detected by indirect immunofluorescence between two sera collected at the disease onset and at the seroconversion phase;
2. The detection of *Legionella* by direct fluorescent antibody (DFA) staining in respiratory secretions or lung tissue using evaluated monoclonal reagents
3. A single high titre ($\geq 1:256$) in specific serum antibody to *Legionella pneumophila* serogroup 1 or other serogroups or other *Legionella* species.
4. The detection of *Legionella* specific DNA by polymerase chain reaction (PCR).

From 1983 to 2003, a total of 2983 cases of Legionnaires' disease were reported in Italy. From 1983 to 1992 about 36 cases have been notified yearly. From 1992 to 1998 the number of notifications rose from 36 to 106 cases per year, whereas in the period 1999-2003 the number of cases continued to increase sharply with an average of 271 cases per year.

Overall, in 2003, 617 cases were notified, 72% of which were notified from just three Italian regions (Lombardy, Piedmont and Latum), while the remaining 28% of the cases were notified from the other 14 regions and two autonomous provinces. There were only two regions in which no cases were reported.

Community-acquired infections were more frequent in respect to nosocomial or travel-acquired infections; approximately 70% of the cases were community-acquired, 18% were associated with travel, either in Italy or abroad, and 12% of the cases were reported as nosocomial.

Patients characteristics were very similar to those reported in the previous years, in terms of male/female ratio, age distribution, occupation and risk factors.

Disease lethality was equal to 9.3% for community-acquired infections and to 37.8% for hospital acquired infections.

Urinary antigen detection was the most frequently used diagnostic method (86%), followed by serology (9%) and by isolation of *Legionella* from respiratory secretion (4%). Diagnosis was made using more than one diagnostic method only in 9% of the cases.

Legionella pneumophila serogroup 1 infection accounted for 88% of the total cases.

Conclusions

The major increase in reported cases of Legionnaires' disease, occurred in Italy between 2001-2003, is likely due to: the greater use of the urinary antigen detection test, to a greater awareness for the disease among clinicians and to an enhanced surveillance system.

However, *Legionella* infections still remain undetected and underreported especially in some regions of Southern Italy.

In 2003, the percentage of nosocomial and travel associated cases is similar to that found in 2002, but an increase in the number of clusters related to both sources of exposure is observed.

During 2003, 20 accommodation sites were associated with the same number of clusters and environmental investigations carried out immediately following the cluster alert found that 60% of these sites were positive for *Legionella*.

These results underline the need for implementing control measures not only in the presence of clusters but also as a routine procedure in order to avoid preventable disease and economic damage to the tourist industry.

Equally important is the prevention of nosocomial cases of legionellosis since they are associated with a high lethality (37.8% in 2003).

Lastly, it is noteworthy to stress the importance of using the urinary antigen detection test, especially associated with the culture of respiratory secretions, in order to specifically detect the agents responsible for pneumonia, i.e. all *Legionella pneumophila* serogroups and species.

In particular, culture testing allows for the comparison of clinical and environmental strains, in order to promptly recognise sources of infection and to carry out appropriate control measures.

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