

LEGIONNAIRES' DISEASE CLUSTERS ASSOCIATED WITH TRAVEL TO SPAIN DURING THE PERIOD JANUARY 2001 TO JULY 2003

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Epidemiological surveillance and control of travel associated cases of legionnaires' disease are necessary tasks for public health and collaboration between countries is necessary to do this. Within the framework of the European Surveillance Scheme for Travel Associated Legionnaires' Disease (EWGLINET), European Guidelines for Control and Prevention of Travel Associated Legionnaires' Disease have been produced. This has established the reporting and response criteria when cases or clusters appear. In this paper the analysis of the information corresponding to the 46 reported clusters related to Spain is presented. Data corresponds to the period January 2001 to July 2003.

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Introduction

Spain is among the European Union (EU) countries that receive the largest number of tourists. It is estimated that 30 million tourists (1) visit Spain every year (the population of Spain is 40 million). In Spain, guidelines for the prevention and control of legionnaires' disease (LD) have existed since the 1980's. Some of these guidelines have been developed by the health authorities in the tourist areas and are specifically targeted at the prevention of the illness in the accommodation sites. In 2003, national law was passed in Spain (2) that targeted installations that could be possible sources of infection and which included both preventive and control measures should cases or outbreaks appear.

Methods

Information received through EWGLINET, whose functions have been described elsewhere (3), and notifications of cases and clusters of legionellosis received by the National Epidemiology Centre (NEC) through the National Epidemiological Surveillance Network (NESN) have been analysed. Reporting of legionnaires' disease by physicians

is mandatory in Spain. The NESN gathers, on a weekly basis, any cases of legionnaires' diagnosed and reported by physicians, accompanied by a minimum dataset that includes demographic, clinical and epidemiological information about the case. When a cluster or outbreak occurs, the health authorities of the affected region send the NEC a report which includes a summary of the epidemiological and environmental investigation carried out.

Spain has adopted the 2001 definitions of cluster and sporadic cases (4) and the procedures for the notification and follow-up of clusters in foreign travellers set down by the EWGLINET Guidelines for the Prevention and Control of Legionellosis (5). Travel is defined as staying away from home for one or more nights in accommodation such as hotels, campsites etc., in the 10 days before the onset of illness.

In this paper, the combined analysis of the clusters associated with travel, including foreign cases as well as national travellers from the year 2001 to the end of July 2003, is presented.

Results

From January 2001 to July 2003, 46 clusters were notified and 135 people were affected; 74 were foreign travellers and 61 were Spanish (TABLE). Twenty six out of the 46 clusters included only foreign citizens, 14 included Spanish and six had cases of both origins. Fifty cases were citizens of the United Kingdom, the Netherlands and Sweden. These cases accounted for 69% (51 out of 74) of cases of foreign origin.

The mean age was 62 years (ranging from 25 to 89). No differences were observed between foreign and national travellers in this respect. The male-female ratio was 2.4/1 in nationals and 3.3/1 in

TABLE

Number of clusters, cases and deaths associated with travel in Spain. Mean and range of days of stay by type of accommodation site. January 2001-July 2003.

	Number of clusters	Number of cases	Mean of stay (days)	Range (days)	Number of deaths	Case Fatality Ratio
Hotels	31	89	7.0	1-15	4	5.0
Spa-resorts	5	20	11.0	0-23	0	0
Apartments Apart-hotel						
Camp-sites	3	7	12.0	2-31	1	14.3
Total	46	135	8.6	0-61	10	7.4

1. National Centre for Epidemiology. National Institute of Health Carlos III. Spain
2. Legionella Reference Laboratory. National Centre of Microbiology. National Institute of Health Carlos III. Spain

foreign travellers. All but 11 cases were diagnosed by urinary antigen test. Four cases were diagnosed by culture. Seven cases were probable cases.

Ten deaths were recorded, however the outcome information was not available for 76 (56.3%) cases. The case fatality rate was higher for those who stayed in Apartments or Apart-hotels, but the numbers are too small to draw any conclusion.

The clusters detected were small, ranging in size from two or three cases (37 out of the 46 clusters) to eight cases (2 out of the 46). Most clusters were related to hotels (31 out of 46). Clusters at other accommodation sites were less frequent: seven clusters were related to apartments, three to campsites and five to spa resorts. Only Spanish people were affected in these spa resorts due to the fact that these are not located in tourist areas. The mean length of stay in the accommodation sites was 8.5 days (0 to 61 days). This figure was 9.1 days for foreigners (1 to 61 days) and 7.3 days for Spanish (1 to 23 days). Regarding the duration of the cluster (time between the first and the last case notified) this was less than six months in 20 of the clusters (43.5%).

The mean time between the onset and notification by EWGLINET for the clusters of foreign travellers was 47 days (range was from 7 to 450 days). A reduction in this mean time was observed in 2003 compared to 2001 (26 days versus 65).

Accommodation sites related to the clusters are located on the mainland Mediterranean coast and the Spanish islands of the Mediterranean and Atlantic (FIGURE). Clusters associated with both foreign and Spanish travellers demonstrated a similar location pattern. Only eight clusters were located outside of the main Spanish tourist areas.

The microbiological results of the environmental investigation were positive for 25 clusters (54% of the total). The reports stated that the microorganism was *L. pneumophila* serogroup 1 for thirteen of these positive results. No differences were observed in the per-

centage of positive results between clusters that lasted less than six months and longer clusters. No differences were observed in this regard when comparing clusters of foreigners to those including only Spanish travellers. With respect to size, in those clusters with two or three cases, the percentage of positive results was approximately 50%. All results were positive in those clusters which had four cases or more except in one cluster of eight cases.

However, only detailed information about the inspection carried out at the accommodation site for 25 clusters was received. The most frequent deficiencies were related to incorrect temperatures, both in cold and hot water systems, followed by inadequate chlorination. In one hotel the guests were moved out.

Discussion

The adoption in January 2001 of the new definition for clusters signified an increase of 37% (17 out of 46) in the number of travel associated clusters related to Spain. In addition, the introduction of new procedures in July 2002 has resulted in a significant increase in the burden of work at all levels in the process of notification, investigation and control. However, these changes have been adopted smoothly by the Spanish health authorities. Up to the present, EWGLINET forms A and B have been sent in promptly for all the accommodation sites inspected and all the sites have complied satisfactorily with the control measures required by the environmental health officers.

One limitation observed was that Spanish regional health authorities have replaced the previous more comprehensive reports of the environmental results of the investigation with just the forms A and B. This change has caused a significant loss of information.

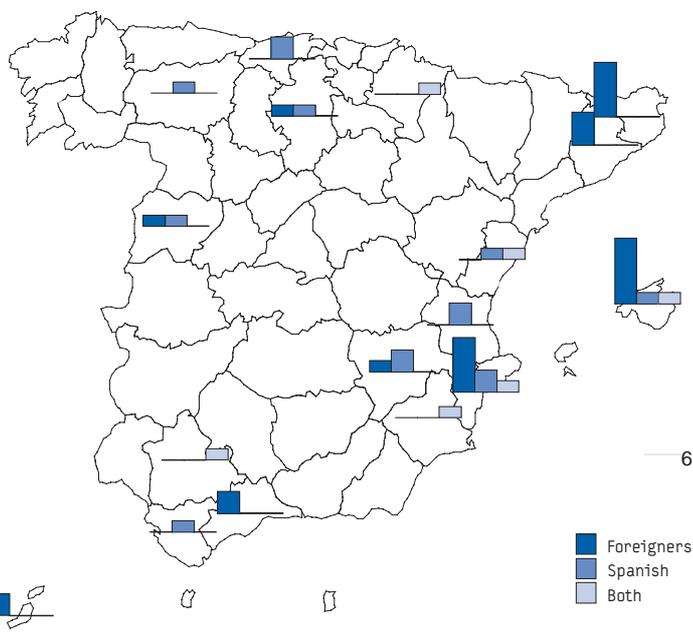
The difference between the number of clusters of Spanish and foreign travellers may be accounted for by the type of holidays and accommodation sites used. No other major differences were observed. The small number of clusters associated with campsites merits further investigation.

It is worthy of mention that 13 clusters 40.6% (13 out of 32) were composed of citizens of different countries and that these clusters would never have been identified without the work of EWGLINET. Also, the improvement in the reduction of the time delay for notification has to be mentioned.

The increasing use of the urinary antigen test has impaired the possibility of comparing clinical and environmental isolates. A weakness in the EWGLINET procedures, which could be considered for future modifications, is the limited epidemiological information that is presently collected. More detailed information related to risk exposure would help with the investigation of clusters in the country of origin of the infection.

FIGURE

Geographical distribution of clusters by the origin of the cases. Spain January 2001-July 2003



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