

LYME DISEASE IN BELLUNO - A NORTH-EASTERN ITALIAN PROVINCE

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ABSTRACT

Lyme borreliosis (LB) has a world-wide distribution and may be seen where ixodes ticks are found. *Ixodes ricinus* is the vector: ticks have been found in the mountains and *Borrelia burgdorferi* was isolated from the vector. Our survey focuses on Belluno Province in Veneto Region, an Alpine mountain Region in the North-East of Italy. Data on LB reported from 1977 to 1993 were examined according to incidence, localization and seasonal distribution of ticks-bites as well as age and sex of the patients. LB diagnosis was made in 284 subjects: in 256 cases infection occurred in Belluno Province and in 28 cases outside of the Province. In 178 cases (63%) the diagnosis was made in Dermatologic Out-Patient's Department. The disease was recognized by the presence of erythema migrans (EM).

LB prevalence has been increasing from 10/ 100 000 in 1988 to 29/ 100 000 in 1992. Most of the people who developed borreliosis were in the 40-70 age range, 53% were females. The authors suppose that roe deers are mainly responsible for spreading LB in the Belluno Province.

KEY WORDS

Lyme borreliosis, Belluno, Italy, roe deer

INTRODUCTION

The disease is named Lyme disease or Lyme borreliosis (LB) after an unusual outbreak of arthritis took place near the city Lyme (Connecticut, USA) in 1977 (1,2). Our survey focuses on the Belluno Province, an Alpine mountain region in the North-East of Italy (Figure 1). It is a hilly district at the foot of the Dolomites with wooded and grazing land. Villages are usually located in the mountains and they are surrounded by fields. Deciduous trees

followed by conifers and grassland are situated at 700-1000 meters above the sea level, where no major settlement is located. Agriculture and stock-farming, major industries of the past, have now been superseded by new activities, like handicraft industries, services and tourism. This new environment modified the approach and the relationship between the people and the surrounding wildlife.

We collected and analyzed all available data on LB reported cases in the region from 1977 to 1993.



Fig. 1. Geographical position of Belluno province in the North-East of Italy.

284 cases have been found: 28 occurred outside of the Province of Belluno, 256 inside. In the present report only patients infected in Belluno region are included.

AIMS

1. To study the incidence and the prevalence of LB in the Province of Belluno.
2. To identify age and sex distribution of subjects affected by LB.

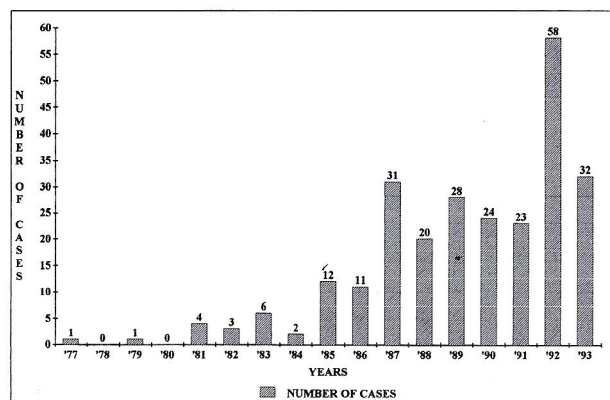


Fig. 2. Yearly distribution of illness occurred in Belluno province from 1977 to 1993.

3. To find if there is any seasonal distribution of infected tick bites.

SUBJECTS AND METHODS

The population of the investigated area is about 200 000 inhabitants and no significant population changes happened since 1977. We analyzed all the data collected by Dermatologic diagnostic units, by the Hospital for Infectious Disease, by Public Health Centers and by general practitioners in Belluno Province. Data related to hospitalized patients have been made available by the Computerized Data Processing Center of ULSS 2. The criteria for diagnosis of Lyme borreliosis have been the following:

- 1 presence of EM or
- 2 symptoms and signs of 2nd and 3rd stage of LB with borreliar antibodies in serum and/or in CSF.

The diagnosis was made:

- by dermatologists in 70% of cases (178/256) through clinical diagnosis of EM;
- by attending physicians of Internal Medicine, Infectious Disease and Neurologic wards in 16% of cases (42/256); diagnosis was made considering clinical and immunological data;
- by Public Health Centers physicians in 10% of cases (26/256) diagnosing clinically EM;
- by general practitioners in 4% of cases observing EM;

The data collected by the different Health Centers included diagnosis, surname, first name, sex and age of the patients. Additional information e.g. area and

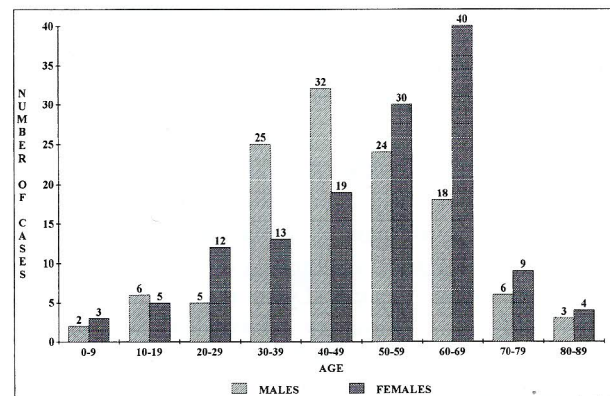


Fig. 3. Distribution of patient according to sex and age when bitten in Belluno province.

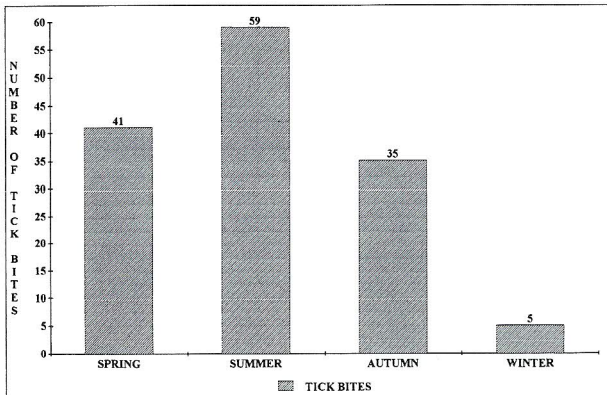


Fig. 4. The number of the registered tick-bites according to the seasons of the year.

season of the tick bite were obtained by a telephone interview.

RESULTS

According to collected data the LB was diagnosed in 284 subjects since 1977 until 1993. 256 occurred in Belluno Province and 28 outside this area. The incidence of LB has been increasing since 1977 when only one case has been reported and reached its maximum with 58 cases reported in 1992 (Figure 2). In the past five years LB prevalence changed from 10/100 000 in 1988 to 29/100 000 in 1992.

Females seem to be more often affected by LB than males (53% versus 47%). It appears that females develop LB more often in the 40-70 age range (55%, 89/163) while males are more involved in the 20-40 age range (55%, 30/55) (Fig. 3).

190 out of 256 patients (74%) who were reached by phone, answered our additional questions. 139/190 (73%) remembered the area of the tick-bite, 140/190 (74%) remembered in which season they were bitten. Most of the people we interviewed (71%) have been bitten during spring and summer; only 4% suffered a tick bite in winter.

DISCUSSION

In Italy, as well as in Europe, *Ixodes ricinus* is the vector of *Borrelia burgdorferi* (3,4) and ticks of this species have been identified in the mountains of our region. *Borrelia burgdorferi* was isolated in the vectors in North-East of Italy: Friuli Venezia Giulia and Alto Adige (4,5) and in the South of Austria: Styria (6). In Italy, from 1977 to 1993, 168 cases of LB were identified in Liguria, 455 in Friuli Venezia Giulia, 25 in Toscana (7, 8) 7 in the Province of Pavia. On the basis of retrospective analysis of collected data we identified from 1977 to 1993 284 cases of LB in the Province of Belluno.

Our data point out that in Belluno Province prevalence increased from 10/100 000 in 1988 to 29/100 000 in 1992, showing a slight decrease to 16/100 000 in 1993. According to the figures it appears that LB disease incidence increased since 1977, but we should keep in mind that much more attention has recently been paid to LB diagnosis: so the increase is probably not only due to spreading of the disease. Cutaneous involvement is prevalent compared to other clinical symptoms. According to our data on infected ticks, the risk of acquiring LB is high along Piave River and especially on the left bank.

In this area ticks are particularly abundant. Some authors (9) point out that the risk for roe deers of getting ectoparasites, and especially ticks, is higher on the left bank of Piave River, from its sources, near Mount Paralba, to Quero gorge. Animals living there are more infested by ticks than those living in other areas of Belluno Province, such as Comelico, Ampezzano and Upper Agordino.

CONCLUSION

We suppose that roe deers have a leading role in spreading LB in Belluno Province.

Abundance of ticks can be considered as a resultant of the change in the ecological system due to great socio-economic modifications in the last few decades (10).

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