

Need of interdisciplinary competence and the role of the Department of Health in the Struggle against Lyme borreliosis

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S U M M A R Y

Lyme borreliosis is the most frequent vector-borne disease in North America and Europe. Currently the most important way to face it is prevention with the diffusion of correct information. The principal goals of prevention are to avoid tick bites and to stop the progression of the disease. These results are obtained by a correct behavior and, in case of a tick bite, by proper procedures that can reduce the risk of infection. Patients need to be instructed about the correct tick removal method and about the possible signs and symptoms of the disease. The use of prophylactic antimicrobials following a tick bite is not recommended. Due to the problems of scarce sensitivity, specificity and standardization, serological tests should not be used as screening method.

K E Y W O R D S

Lyme
borreliosis,
prevention

Lyme borreliosis (LB) is the most frequent vector-borne disease in North America and Europe. However, certain confusion still exists, partly due to the scarce circulation of correct information (1, 2, 3, 4). In Italy (5) there is scarce perception of this pathology and the tendency to submit information to the mass-media by "apparent experts" has often furnished incorrect and also risky information.

Due to the impossibility to eliminate the vector or the reservoirs (6, 7), and because no vaccination is available in Europe, currently the most important way to face LB is prevention (8, 9). This implicates the necessity for faultless information that is actively distributed among physicians as well as laymen. What has happened in Italy and in other countries, however, shows that there is a lack of such information, with the result

that people today are familiar with rickettsial diseases or have heard about the so-called "killer tick" but don't know the real facts about the problems associated with LB. Nevertheless we are in an advantageous situation for at least two reasons: 1) LB has not yet reached diffusion equal to that in the USA or in some European countries close to us; 2) we can utilize the experience from the USA and are therefore able to avoid the same mistakes that have been made there.

The activity of spreading correct information is one of the assignments of the Department of Health, but every physician should provide competent advice. Scientifically well-founded information must not be confused with contradictory information and alarming and unserious news needs to be avoided (10, 11, 12).

Prevention is an effective method, when performed

correctly. The principal goals of prevention are to avoid tick bites and to stop the progression of the disease.

The avoidance of tick bites is best obtained by suitable clothing and a correct behavior, during outdoor activities, and with a correct and frequent maintenance of gardens and parks. In case of a tick bite, it is again a proper procedure that can reduce the risk of infection and consequent manifestation of LB (13).

In LB endemic areas, the infection rate of ticks with *Borrelia burgdorferi* is up to 5-20%. Thus it has to be suspected, as a matter of principle, that a tick that is attached to a person in such areas could be infected. It has been shown that the risk of infection increases after 36-48 hours from the beginning of the blood meal of the tick. Accordingly, a prompt removal of the tick notably reduces the risk of a transmission of spirochetes.

All the traditional removal methods, i.e. application of various agents on the tick such as alcohol, gasoline, oil, nail-polish, heat etc. to facilitate its detachment, have to be avoided. These methods induce regurgitation in the tick with consequent increase of the risk. The correct method to remove the tick is to pull it out with fine tweezers, which have to be set on to the skin as close as possible, and then applying an antibiotic locally (14, 15, 16). After that the patient should daily and carefully observe, at least for 30-40 days, the tick bite site for the development of a skin lesion suspicious of LB, the pathognomonic erythema migrans. The patient should also pay attention to extracutaneous manifestations of LB, as well as to manifestations of other infections. Pa-

tients need to be instructed about possible signs and symptoms and the time interval from the tick bite to disease, which may last several months. This observation is crucial in order to be able to initiate an appropriate treatment as early as possible.

Weighing both the risk and the consequences of developing LB, including late manifestations, for persons bitten and the costs and adverse effects of prophylactic antimicrobials, a routine prescription of antibiotics following a tick bite is not recommended (17, 18, 19). During the observation, if it is necessary to use antibiotics for other reasons, they must be effective also on LB. The dosage and time for the treatment must last three weeks. The purpose is to avoid a "decapitated LB", as happened in the past with the syphilis.

Given the problems with sensitivity, specificity and standardization, serological tests should not be used as screening method because, with many false results, they are useless in this setting (20, 21, 22, 23). We must remember that up to 15% of healthy people result positive because of a precedent exposure or due to cross-reactions, so that a serological reactivity alone is not synonymous with disease (24, 25, 26, 27, 28, 29); moreover, antibodies to *Borrelia burgdorferi* are not detectable within the early weeks after an infectious tick bite, which means that a negative serological titer after a bite does not exclude the infection. Finally, the diagnosis of LB is mainly clinical, while laboratory is a valid help but not sufficient to make the diagnosis (30, 31, 32, 33, 34, 35, 36, 37, 38).

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