



THE LABORATORY DIAGNOSIS OF LYME DISEASE

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Introduction. Lyme disease, the most common vector-borne illness, is usually caused by infection with the spirochete *Borrelia burgdorferi*. Worldwide, higher prevalence is noted in Central, Eastern, and Northern Europe, the US and Canada, and parts of Asia. The disease is transmitted to humans via tick bites. The typical symptoms include fever, headache, fatigue, sore muscles and joints, and a characteristic skin rash called erythema migrans. Currently, the majority of the international guidelines recommend the testing of blood for evidence of antibodies against the Lyme disease bacteria using the blood sample and fluid from the central nervous system. The basic Lyme test is called an enzyme-linked immunosorbent assay (ELISA). Therefore, every positive or uncertain Lyme ELISA result needs to be confirmed with Western blot test. Reducing exposure to ticks is the best defense against Lyme disease and other tick-borne infections.

Material and methods. The objective of the study was to carry out an analysis of the literature related laboratory diagnosis of Lyme disease and was based on 79 bibliographic sources of authors across the country and abroad using Academic Google and PubMed databases for articles published from 2012-2021.

Results. This review details the risk factors, clinical presentation, diagnoses treatment, and prophylaxis for the disease. The prime season for tick-borne disease begins when weather becomes warmer, people enjoy outdoor activities in woody or brushy areas and the ticks begin to be more active. People in certain occupations, for example, farm workers, are at higher risk. Typically, the tick must feed for at least 36 hours for transmission of the causative bacterium, *Borrelia burgdorferi*.

The diagnosis of Lyme disease is based on symptoms, physical findings, the possibility of being exposed to areas where infected ticks could be present and laboratory testing.

In recent years the issue of the diagnosis of this infection has been highly publicized. Laboratory tests check for antibodies in the blood however Lyme disease antibodies may first appear six to eight weeks after a person has been bitten by a tick. A good occupational, travel, and lifestyle history is important when assessing patients. Early laboratory tests may not detect the disease and could slow diagnosis. The disease is associated with specific clinical features: early localized infection, with erythema migrans, fever, malaise, fatigue, headache, myalgias, and arthralgias; early disseminated infection, with neurologic, musculoskeletal, or cardiovascular symptoms, multiple erythema migrans lesions and late neurologic manifestations may occur.

Lyme disease is most commonly diagnosed by a screening test called ELISA, then confirmed using a western blot test, but in some cases also by testing a sample of the skin lesion by nucleic acid testing or culture. Some laboratories can analyze the tick to see if it's carrying Lyme bacteria. Lyme disease prevention measures described in the majority of the analyzed studies are the following: use insect repellent, remove ticks immediately with fine-tipped tweezers, apply pesticides to lawns and other high-risk areas, properly maintain yard or land, walk in the center of hiking trails and wear light-colored clothing to make it easier to find ticks on your body.

Conclusions. Prompt diagnosis and early treatment are extremely critical for Lyme disease because it helps reduce the risk the development of further symptoms. Preventive measures should be emphasized to patients to help reduce risk.