

IMMUNOLOGY OF LYME BORRELIOSIS

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ABSTRACT

Borrelia burgdorferi shows both a variety of outer surface proteins with molecular weights between 14 and 100 kilo-Dalton and a 41 kilo-Dalton flagellar protein which induce the immunologic response in the infected host. Lipopolysaccharides are responsible for inflammatory reactions and for constitutional symptoms. A vigorous T-cell immune response first develops followed by a more slowly evolving B-cell immune response later on. The humoral response shows the usual pattern of IgM antibodies appearing first, followed by IgG and IgA antibodies. The IgM antibody titre may normalize after recovery while the IgG titre may persist over years or decades. Antibodies to flagellin or to the 60 and 100 kilo-Dalton surface proteins first appear in the course of the disease, later on antibodies to OspA, OspB and OspC can be found. However, elevated ELISA, immunofluorescence titres or the immunoblot do not confirm the diagnosis of Lyme Borreliosis. The diagnosis has to be made clinically and by excluding other diagnoses.

KEY WORDS

Lyme borreliosis, immunology, Borrelia burgdorferi, T-cell immune response, B-cell immune response, immunoblot

THE IMMUNOGENIC SURFACE OF *BORRELIA BURGDORFERI*

The surface of *Borrelia burgdorferi* (*Bb*) shows both a variety of outer surface proteins (Osp) with molecular weights between 14 and 100 kilo-Dalton (kD) and a 41 kD flagellar protein; these immunogenic epitopes induce an immune response in the infected host. Lipopolysaccharides, also constituents of the bacterial capsule, are responsible for the inflammatory

reaction, constitutional symptoms and the Jarisch-Herxheimer reaction (1).

A number of different American and European strains of *Bb* have been differentiated on the basis of their proteins. Analysis has shown that all strains have two components of constant molecular weight in common: the 60 kD („common antigen“) and the 41 kD flagellar antigen („flagellin“). The common antigen is not specific for *Bb* and can be seen in a wide range of remotely related bacteria. The flagellin

