LYME BORRELIOSIS: GUIDELINES TO A SPECIFIC DIAGNOSIS

G. Stanek, F. Breier and E. Aberer

DIRECT DETECTION

CULTURE

The most important instrument for the identification of a specific case is knowledge of the clinical presentations of Lyme Borreliosis. Ideally, this should be supported by the isolation of the infectious agent. However, the success of isolation and cultivation procedures in Lyme Borreliosis depends on the clinical manifestation of Lyme Borreliosis. Laboratories with long experience in the isolation and cultivation of borrelia from human specimens may achieve isolation rates of 80% from skin biopsies and of 30% from cerebrospinal fluid samples taken from patients with erythema migrans and meningoradiculitis, respectively. Consequently, only positive results are of value, but negative ones do not exclude Lyme Borreliosis.

STAINING TECHNIQUES

Non-specific stains are the Steiner method as well as Bosma Steiner, Warthin Starry, Dieterle, and their modifications. These histochemical techniques may work well in the hands of experienced technicians. However, the results are not specific and additional methods are required to identify a case.

Specific methods include immunohistochemical technique. This uses modifications of the immunoperoxidase method as developed by Steiner and involves a substitution of avidin-biotin and biotinylated secondary and tertiary antibodies in place of horse radish peroxidated conjugates. Both cryostat and paraffin embedded tissue sections can be used but frozen sections seem to work best for immunohistochemical detection of borrelia. With respect to the large number of subtypes of *Borrelia burgdorferi* sensu lato it would be a very complicated and time consuming process to identify a strain on the species level. Again, these techniques cannot be recommended for routine diagnostic procedures.

POLYMERASE CHAIN REACTION

The polymerase chain reaction (PCR) provides the possibility to detect specific sequences of borrelial nucleic acids in human specimens. PCR may be potentially helpful, however, protocols remain essentially non-standardized or their use in a clinical context is not fully evaluated. There is no general agreement on the most appropriate genomic targets for amplification and whether the presence or absence of borrelia DNA is clinically significant in some manifestations of Lyme Borreliosis.

INDIRECT DETECTION

Detection of specific antibodies in serum and other body fluids is currently the method widely