

ELECTRON MICROSCOPY AND THE POLYMERASE CHAIN REACTION OF SPIROCHETES FROM THE BLOOD OF PATIENTS WITH LYME DISEASE

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SUMMARY

Results of studies using direct antigen detection suggest that seronegative Lyme borreliosis is not rare and support the hypothesis that *Borrelia* antigens can persist in humans. We report three successful cultures from blood out of 30 attempts from 96 Lyme disease patients. The proof of borreliaemia in early or late phases of Lyme disease by immuno-capture electron microscopy has practical importance for subsequent cultivation. The polymerase chain reaction with oligonucleotide sequences directed against 16S rRNA identified two of our blood isolates as *Borrelia burgdorferi* sensu lato, VS 461 group, and one as *Borrelia garinii* sp. nov.

All of the three isolates were reactive with monoclonal antibody H9724 against flagellin and with antibody against main extracellular protein at 83 kDa. *Borrelia garinii* had a single predominant protein OspA at 33,5 kDa and reacted with monoclonal antibody H5332 in contrast to two isolates of the VS 461 group with two major proteins OspA and OspB at 32,5 and 35 kDa.

We conclude that isolation of spirochetes from the blood might prove successful in clinically selected cases of Lyme borreliosis. Immuno-capture electron microscopy has proved to be a sensitive assay for monitoring and studying Lyme borreliosis.

Key words: Lyme borreliosis, immuno-capture electron microscopy, polymerase chain reaction, monoclonal antibodies, *Borrelia burgdorferi* VS group, *Borrelia garinii*, blood isolates, major proteins, sodium dodecyl-sulphate electrophoresis

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