Detection of Borrelia burgdorferi DNA by polymerase chain reaction in the urine and breast milk of patients with Lyme borreliosis.

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Current laboratory diagnosis of Lyme borreliosis relies on tests for the detection of antibodies to Borrelia burgdorferi with known limitations. By using a simple extraction procedure for urine samples, B. burgdorferi DNA was amplified by a nested PCR with primers that target the specific part of the flagellin gene. To control possible inhibition of the enzyme (polymerase), a special assay using the same primers was developed. We examined 403 urine samples from 185 patients with skin manifestations of Lyme borreliosis. Before treatment, B. burgdorferi DNA was detected in 88 of 97 patients with Lyme borreliosis. After treatment, all but seven patients became nonreactive. Six of these seven persons suffered from intermittent migratory arthralgias or myalgias, and one from acrodermatitis chronica atrophicans. Two of 49 control patients with various dermatologic disorders and none out of 22 presumably healthy persons were reactive in the PCR. In addition to urine, breast milk from two lactating women with erythema migrans was tested and also found reactive. Borrelia burgdorferi DNA can be detected with high sensitivity (91%) by a nested PCR in urine of patients with Lyme borreliosis. In addition, this test can be a reliable marker for the efficacy of treatment.