EARLY DIAGNOSIS OF LEPTOSPIROSIS BY MULTIPLEX POLYMERASE CHAIN REACTION

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Abstract

Background: Leptospirosis is one of the most widespread zoonoses worldwide. Laboratory testing of leptospiral infections is important for accurate diagnosis of leptospirosis. Moreover, early diagnosis is particularly important for the clinical management of the patients. The objective of this study was to determine the leptospiral infections in blood samples from suspected leptospirosis patients using serology and DNA detection.

Methods: Paired-blood samples collected from 78 patients with suspected leptospirosis patients in Sakon Nakhon Province, Thailand, were investigated. Antibodies to leptospires by microscopic agglutination (MAT) using antigens from each of the 24 reference serovars consisting 23 pathogenic and one saprophytic leptospires. Leptospiral DNA was detected by multiplex polymerase chain reaction (PCR) using specific primers designed from bacterial 23S rDNA of leptospires.

Results: Serum samples from 17 (22%) of 78 patients with suspected leptospirosis were positive by PCR as compared to 18 (23%) by MAT. Leptospiral DNA was amplified from extracted DNA of blood samples, as early as at day 1 after illness. The presence of leptospires was demonstrated by PCR in 7/18 (39%) patients before the development of antibodies. Two patients with seroconversion by MAT showed clearly positive results by PCR. Among 60 negative-MAT samples, 8 (13%) were found to be positive by PCR.

Conclusions: Leptospirosis diagnosed with positive results by either MAT or PCR or both tests, which occurred in Sakon Nakhon Province were 21 (27%). Use of PCR in adjunction to MAT, the leptospirosis cases increased from 23% to be 36%. The results indicated that PCR is a rapid, sensitive and specific assay for diagnosing leptospirosis patients was very useful in early diagnosis of Leptospirosis.

Key Words: Leptospira, PCR, Early Diagnosis