

Introduction: Invasive meningococcal disease continues to be a life-threatening condition. Rapid diagnosis is important for the administration of appropriate treatment. Our study focuses on evaluation of importance of PCR method for diagnosis of meningococcal disease. We describe in detail the dynamics of PCR method and its relationship to other diagnostic methods (LA, culture) and to the course of the disease. We also evaluated the influence of previously applied antibiotics therapy to results of these diagnostic methods.

Methods: We have investigated cerebrospinal fluid and serum samples collected during the 1st week of hospitalization from patients hospitalized at the department of infectious diseases with laboratory confirmed invasive meningococcal disease. Bacterial DNA was isolated from biological material by Qiagen kit and one-step and seminested PCR method was used. PCR products were detected on the 2% gel electrophoresis. In parallel, we performed culture and LA methods.

Results: The PCR positivity in cerebrospinal fluid and serum achieved 92 % and 46 %, respectively, LA positivity in cerebrospinal fluid, serum and urine achieved 47 %, 42 % and 24 %, respectively. Culture of CSF and blood was positive only in 35 % and 39 %, respectively. The latest PCR positivity was detected at Day 7 in cerebrospinal fluid and Day 5 in serum what points to more rapid elimination of pathogen from serum. The duration of the positivity of LA in CSF and serum (Day 2 and Day 3) is shorter than in PCR, and the last positive result of LA in urine was achieved at Day 4 after the onset of the ATB therapy. We proved significant reduction of positivity of culture after the onset of ATB therapy and almost unchanged positivity of PCR. We found positive correlation between the severity of the disease and the dynamics of PCR. We encountered a high percentage of PCR-positive CSF samples in septic forms of the IMD.