Summary

Recently introduced methods of DNA detection by polymerase chain reaction (PCR) were applied for direct evidence of infectious agents (*Toxoplasma gondii, Entamoeba histolytica/dispar* and pathogenic leptospires). For the evidence of *Toxoplasma gondii* DNA by means of PCR two genes were selected: B1 and TGR 1E. The antibodies were detected by KFR and EIA tests. PCR was examined in 441 samples (positive in 5.2 %) from 347 persons (positive 6.0%). In the set of 120 pregnant women the positive *T. gondii* was detected in 8.3%, associated with 100% proven IgG immunoglobulins, and in more than 50% also with antibodies of other classes. The congruence of results proved the specificity of PCR for the evidence of *T. gondii.* The PCR method is important mainly for certain risk categories of population: the foetus of pregnant woman, patients with immunosuppression, suspected congenital toxoplasmosis and atypical course of toxoplasmosis.

The differentiation of the invasive *E. histolytica* and noninvasive *E. dispar* by PCR method: DNA for PCR reaction was isolated from hepatic abscess of a patient with extraintestinal amoebiasis, DNA of nonpathogenic *E. dispar* from the faeces of patient with long-term excretion of cysts. PCR evidence of DNA and differentiation of the amoebas was optimized as nested PCR. The primers: external common (E1, E2), internal specific (Eh-L, Eh-R for *E. histolytica* and Ed-L, Ed-R for *E. dispar*). We examined 11 cyst specimens from 7 persons. The DNA of *E. dispar* was detected in specimens of faeces in two cases, *E. histolytica* was not proved. The differentiation of both of them is important as it allows early treatment to prevent invasion of amoeba from the intestine to other organs (extraintestinal form).

In the Czech Republic three genospecies of pathogenic leptospiras occur: *L. interrogans*, *L. kirschneri* and *L. borgpetersenii.* The primers: G1/G2 (common for *L. interrogans* and *L. borgpetersenii*) and B 64I/ B 64II for *L. kirschneri.* In our set results of PCR analysis of 166 specimens from 110 persons are described. In 7 specimens the DNA of pathogenic leptospiras was proven. PCR results were compared with serological analysis (microagglutination-lysis) and completed by 3 case reports which provide evidence of the necessity of sampling specimens for PCR at the onset of infection (to ensure rapid elimination of remnants of leptospiras in the course of ATB treatment) and of initiating the antibodies response.