Abstract of thesis

Diagnostics of neuroinfection caused by human herpesviruses using nucleic acid amplification methods

author: MUDr. Klára Labská
supervisor: doc. MUDr. Vilma Marešová, CSc.

In recent years, the diagnosis of neuroinfections has undergone a shift towards molecular biology methods. Our research focused on the predictive value of the capture of herpesvirus (HV) DNA in cerebrospinal fluid. In the first study, we examined the presence of DNA neurotropic herpes viruses (HSV1, HSV2, VZV and HHV6) in cerebrospinal fluid in immunocompetent patients with laboratory-confirmed tick-borne meningoencephalitis and enterovirus meningitis and meningoencephalitis. The control group consisted of patients with proven absence of an inflammation in the cerebrospinal fluid. Patients were followed for 6 months. The course of the disease and its consequences, including laboratory tests, were compared between groups of patients with and without the presence of HV DNA. In the second study, we tried to demonstrate the presence of HSV1 DNA in cerebrospinal fluid during its symptomatic reactivation in patients with purulent meningitis. In our group of immunocompetent patients with non-purulent inflammation in the cerebrospinal fluid, the proportion of HV DNA positive patients reached 7.5% (13 out of 173), we also captured the DNA of two herpes viruses simultaneously. The proportion of patients with CNS inflammation caused by tick-borne meningoencephalitis with detected DNA from neurotropic herpes viruses was 7.3 % (7 out of 96), with VZV DNA being the most abundant. In the group of patients with enterovirus meningitis and meningoencephalitis, the proportion of patients with HV DNA was 7.8% (6 out of 77) with HHV6 DNA being the most frequent. HV DNA positivity was not associated with severe course of the disease. The reason for HV DNA positivity is probably HV reactivation under inflammatory conditions, which is supported by the minimal capture of HV DNA in patients without inflammatory cytological findings in cerebrospinal fluid. We detected HSV1 DNA in cerebrospinal fluid during its peripheral reactivation in only one patient with significant immunodeficiency. Since nucleic acid amplification-based methods are currently the main diagnostic tool, the detection of the DNA of neurotropic herpes viruses in cerebrospinal fluid can cause diagnostic difficulties. The result of these examinations should always be interpreted in comprehensive manner with regard to the patient's clinical condition, history and the results of other examinations.