ABSTRACT

Charles university

Faculty of Pharmacy in Hradec Králové

Department of Biological and Medical Sciences

Study programme: Bioanalytical laboratory diagnostics in health care

Author: Bc. Denisa Janů

Supervisor: PharmDr. Ondřej Janďourek, Ph.D.

Title of diploma thesis: Current possibillities of laboratory diagnostics of EBV

Background: The aim of this diploma thesis was to get acquainted with the issue of Epstein-Barr virus infection and its laboratory diagnostics. Other aim was to divide the patients into groups according to the serological results, then evaluate the prevalence of EBV and evaluate the incidence of primary EBV infection in the tested group of patients for the years 2019-2022.

Methods: Chemiluminescence immunoassay and indirect immunofluorescence were used to determine specific antibodies against EBV. In some cases, the examination was completed by determining the avidity of anti-VCA IgG antibodies and the microblot array method. Real-time PCR was used to detect EBV DNA. Microsoft Excel 2016 was used to process data and to create tables and graphs.

Results: For the years 2019-2022, 14,736 patients were tested for the presence of specific antibodies against EBV in the infectious serology and virology laboratory of Vidia-Diagnostika, 263 patients for the presence of heterophile antibodies and 42 patients for the presence of EBV DNA. As expected, most positive findings of heterophile antibodies were detected in patients aged between 10 and 20 years. The age range of positive patients was from 3 to 31 years, with the highest number of positive patients at the age of 15 and 19. The age range of patients with primary EBV infection was 1-44 years. The highest number of primary infections in the tested group of patients was, as expected, in patients aged between 15 and 19 years.

The seroprevalence of the tested population included in this work was 86.7 %. Patients under 20 years of age (11.5 %) made up the majority of the seronegative population of the tested group. The seroprevalence of patients over 20 years of age was 98.2 %.

Conclusions: The prevalence of EBV in the population is a reflection of cultural habits and socioeconomic status. Available data show that the age at onset of primary EBV infection is increasing. This phenomenon entails the risk of a greater number of more severe disease courses requiring hospitalization. Primary EBV infection was detected most often in patients aged between 15 and 19 years, when the first intensive interpersonal contacts occur. The seroprevalence of the tested sample of patients over 20 years old is more than 98 %. These conclusions correlate with data in foreign professional studies.

Keywords: EBV, Infectious mononucleosis, Burkitt's lymphoma, Hodgkin's lymphoma, avidity, CLIA, PCR, Western blot