МЕДИЦИНСКИ УНИВЕРСИТЕТ - ВАРНА
„Проф. д-р Параскев Стоянов“
Ул.“Марин Дринов“ 55, Варна 9002, България
Тел. : 052/ 65 00 57, Факс: 052/ 65 00 19
e-mail: uni@mu-varna.bg, www.mu-varna.bg

MEDICAL UNIVERSITY - VARNA
“Prof. Dr. Paraskev Stoyanov”
55, Marin Drinov Str., 9002 Varna, Bulgaria
Tel.: +359 52/ 65 00 57, Fax: + 359 52/ 65 00 19
e-mail: uni@mu-varna.bg, www.mu-varna.bg

Fund “Nauka” Project № 17013 Resume – Competition-Based Session 2017:

“Investigation and analysis of the HDV genotypes circulating in Northeast Bulgaria”

Project leader: Chief assist. prof. Zhivka Stoykova Demireva-Kalcheva, MD, PhD

Hepatitis B (HBV) is still a serious social and economic problem for society, due to possible health complications – liver fibrosis, cirrhosis and hepatocellular carcinoma. In patients with HBV, the relative risk of hepatocellular carcinoma is 25 to 35 times higher than in non-infected hepatitis B individuals. Hepatitis D virus is the most interesting and unique among hepatotropic viruses, and viral hepatitis D is the most aggressive hepatitis of all viral hepatitis in the human population and a serious global problem. Susceptibility to hepatitis D is common, but the disease mainly affects children and adolescents.

In patients with dual HBV/HDV infection, the risk of chronification and worsening of the patient's prognosis is drastically increased. Both the different course and outcome of the infection depend on the HDV genotype. The effectiveness of the treatment is also related to the HDV genotype. In the course of our study, the relationship between HBV and HDV was monitored, as well as the stage of the liver disease, as in about 60% of the patients it was more severe and even at the stage of establishing the disease, they have already had liver cirrhosis. Early and adequate genetic diagnosis, in order to determine viral load and genotype is essential in the fight against HBV and HDV and prevents progression to hepatocellular carcinoma.

Our project on “Investigation and analysis of HDV genotypes circulating in Northeast Bulgaria” fully complies with the scientific priorities of MU-Varna, in the field of oncology and rare diseases, and more specifically, genetic analysis of cancer and rare diseases. The exported data are unique for Bulgaria, as so far studies (except in isolated cases) in this direction have not been conducted and published.

Thirty serum samples from patients, with liver dysfunction and positive for anti-HDV Ab have been investigated. Of them, HDV RNA (Negative) were 5 (tested by HDV-RT PCR (real-time reverse transcription-PCR)), (16.7% of all). The products from the remaining 25 serum samples were examined by two consecutive nested-PCR reactions, with the respective primers used. The resulting nucleotide sequences were analyzed by gel electrophoresis and the expected length of 359 bases was confirmed in 20 of them (80%). The resulting sequences were reviewed and analyzed as only one strand of the DNA molecule was sufficient to read and determine HDV genotype. Those whose sequences were read were transferred to a text file and then analyzed by BLAST analysis at the National Center for Biotechnology Information. When comparing the resulting HDV sequences with sequences correlating to

HDV from the database, they were all closely related to genotype I of HDV and circulating among Bulgaria's neighboring countries, as well as in Europe.

The funds spent for the implementation of this innovative project are in full compliance with the initially set goals, as one of the chief investigator (Dr. Denitsa Tsaneva-Damyanova) has personally co-financed its finalization.

Up to now, eight HDV genotypes have been defined, worldwide. They can lead to a diverse clinical manifestations of hepatitis- from asymptomatic liver disease to fulminant hepatitis. HDV genotype determines both the different course and outcome of the disease, as well as, the effectiveness of the applied treatment. This hypothesis confirms the importance of the research and analysis of HDV genotypes circulating in Bulgaria, in order to predict the outcome of the HBV and HDV dual infection and to define the appropriate treatment.