



SIGNIFICANCE OF DIAGNOSTICS OF THE EPSTEIN-BARR VIRUS BY THE ELISA METHOD

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Article history:	Abstract:
Received: January 8 th 2023 Accepted: February 4 th 2023 Published: March 7 th 2023	The aim: Investigation of anti-EBV IgM va anti-EBV IgG against the Epstein-Barr virus by ELISA and antigen analysis. Material and methods: Materials of the InterMed private clinic located in the Yunusabad district of Tashkent in 2022 were used. For the study, 5 ml of blood from the wrist vein was taken from patients and examined by ELISA (BektoVEB-VCA-IgG-IGM, D-2176, D-2184, Vector-Best JSC, Novosibirsk). The results obtained were subjected to statistical processing. Analysis and discussion of results. The highest percentage (34%) of positive results for Epstein-Barr virus antiimmunoglobulins was among children under 10 years of age. When analyzing the results by gender, Epstein-Barr virus was more common in women (55%). 33% negative and 12% positive results were observed for anti-EBV IgM. 34% positive and 66% negative results were reported for anti-EBV IgG. Conclusion: Positive results of Anti EBV IgM and Anti EBV IgG against EBV were noted in the highest percentage (34.0%) among girls under 10 years old - positive results (55.0%). 12% of positive results for anti-EBV IgM indicated acute disease, and 34.0% of positive results for anti-EBV IgG indicated chronic disease.

Keywords: Epstein-Barr virus, Immunoenzyme analysis, mononucleosis, oncological diseases , diagnosis, ELISA

RELEVANCE. Epstein-Barr virus infection is one of the most common human diseases. According to WHO, approximately 55-60% of young children (under 3 years of age) are infected with Epstein-Barr virus (EBV). Most of the adult population on the planet (90-98%) have EBV antibodies [1,3,5]. In different countries of the world, the incidence varies from 3-5 to 45 cases per 100,000 inhabitants, and this is a higher rate. EBV belongs to the group of uncontrolled infections. It does not have specific prevention (vaccination) [4,8,10,11]. The source of EBV infection is a patient who has a clinical picture and is a carrier of the virus. Up to 20% of patients are infectious during the last days of the incubation period, during the initial period of the disease, as well as during the entire recovery period (up to 6 months after recovery). That is, even those who have recovered from the disease occasionally retain their ability to release the virus (carrier)[6,7,12]. EBV can be transmitted to the body through contact with the air, the patient's personal belongings, toys, eating utensils and saliva [9]. Despite the fact that the ways of viral infection are diverse, there is a good immunity layer among the population. Up to 50% of children and up to 85% of adults do not develop symptoms due to well-developed immunity. But in the spring-autumn seasons, mononucleosis, a seasonal form of EBV, is

more common. Currently, the direct connection of the EBV has been determined with the development of diseases such as acute mononucleosis, "chronic fatigue" syndrome, lymphoid interstitial pneumonia, hepatitis, oncological lymphoproliferative diseases (Berkitt lymphoma, T-cell lymphoma, nasopharyngeal or NFC, and lymphoma of the brain, and the tumors of general lymph nodes)

RESEARCH OBJECTIVE: To study the Anti-EBV IgM and Anti-EBV IgG against Epstein-Barr virus by ELISA and carrying out antigen analysis

MATERIAL AND METHODS: The materials of the private clinic Intermed located in the Yunusabad district of the city of Tashkent in 2022 were used. For examination, 5 ml of blood from the wrist vein was taken from patients and was studied by the ELISA method (BektoVEB-VCA-IgG-IgM, D-2176, D-2184, Vector-Best JSC, Novosibirsk). The results were subjected to statistical processing.

ANALYSIS AND DISCUSSION OF RESULTS. Enzyme linked immunosorbent assay (ELISA) is one of the modern methods and differs from the other methods by the use of additional reagents - AG and AB,



targeted enzymes (peroxidase, alkaline phosphatase). Currently, indirect and direct methods of ELISA have been developed. This method is widely used in the diagnosis of Epstein-Barr virus. For the study, 75

patients were selected who were assigned an examination for the Epstein-Barr virus. Blood samples were checked by ELISA, IgM and IgG markers were detected to the Capsid antigen of the Epstein-Barr virus

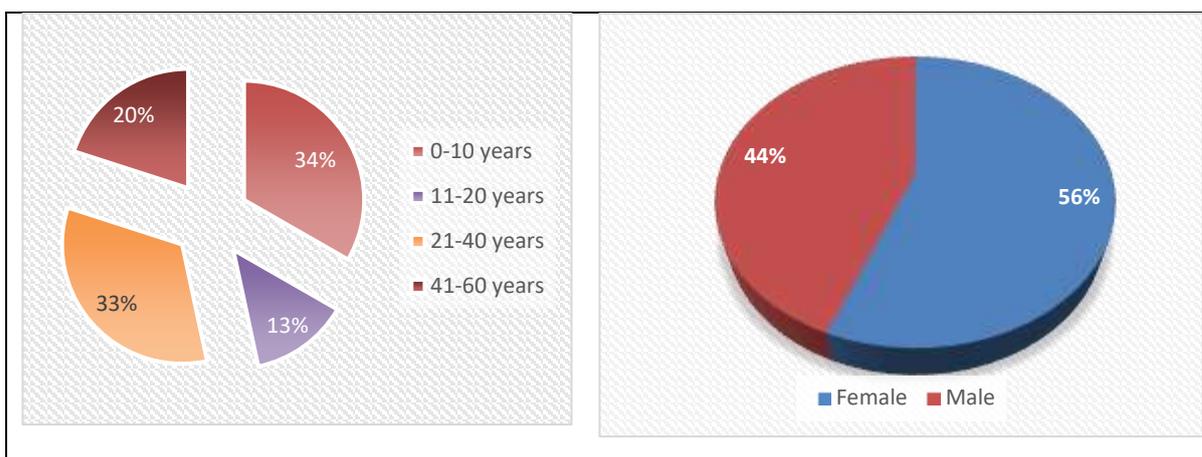


Diagram 1 - 2. Distribution of patients by gender and age (%).

The positive results on anti-Epstein-Barr virus immunoglobulins the largest percentage (34.0%) was found among children under 10 years old (diag. 1), followed by representatives of 21-40 years of age - 20.0%. When the results were analyzed by gender (diag. 2), Epstein-Barr virus was more common in women (55.0%). 33% negative and 12% positive results were observed for anti EBV IgM. 34.0% positive

and 66.0% negative results were recorded for anti-EBV IgG (diag. 3-4). Evaluation limits of Anti EBV IgM and Anti EBV IgG by ELISA: positive - low rate, positive - normal, positive - high rate and distributed according to Anti EBV IgM (**0.3-0.9**), for Anti EBV IgG (**0.9-1.1**) was considered a negative indicator if the result was lower than the lower index.

Table 1.
Units of assessment of anti -EBV IgM and IgG
(Optic density)

Immunoglobulins	Positive (low)	Positive (normal)	Positive (high)
Anti EBV IgM	0.3-0.9	1-1.2	1.3<...
Anti-EBV IgG	0.9-1.1	1.2-1.6	1.7<...

IGM to VCA (capsid antigen)-is detected in the blood in the first days and weeks of the disease, maximum at the 3rd and 4th weeks of the disease, can remain for 3 months, then its amount decreases to an uncertain level and completely disappears. Their duration of more than 3 months indicates a long course

of the disease. They are found in 90-100% of patients with acute EBVI. IgG to VCA (capsid antigen) - appears in the blood in 1-2 months after the onset of the disease, then gradually decreases (remains at a low level). An increase in their titer is characteristic of exacerbation of chronic EBVI.

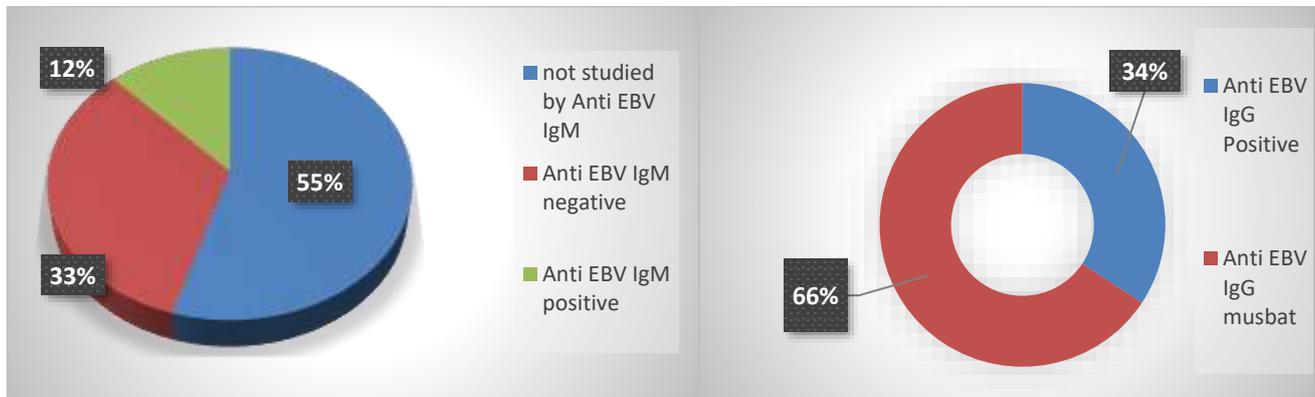


Diagram 3-4 . Anti EBV IgM and Anti EBV analysis

Dynamic laboratory study: in most cases, one test on antibodies is not enough to make a diagnosis. Repeated studies are necessary after 2 weeks, 4 weeks, 1.5 months, 3 and 6 months. Only the attending physician determines the algorithm of dynamic research and its need.

- Compare the results obtained in one laboratory.

- There are no general norms of antibodies; The result is evaluated by a doctor in comparison with the reference values of a particular laboratory, after which the conclusion is drawn about how many times the desired titer of antibodies increased compared to reference value. The threshold level, as a rule, does not exceed 5-10 times. Patients with a reactivated chronic infection often offer outpatient treatment. An infectious disease specialist, pediatrician or immunologist carries out all dispensary observation. After the disease by infectious mononucleosis, dispensary observation is established for 6 months after the disease. Inspections are carried out monthly, if it is necessary to consult narrow specialists: hematologist, immunologist, oncologist, ENT doctor, etc. Laboratory studies are carried out on a quarterly (1 time in 3 months) and, if necessary, a general blood test is carried out monthly in the first 3 months.

CONCLUSION

1. Positive results of the Anti-EBV IGM and Anti-EBV IgG were detected in the greatest percentage (34.0%) among girls under 10 years old - positive results (55.0%). 12% of the positive results for antibodies to the IgM VEB indicated an acute disease, and 34.0% of the positive results for antibodies to the IgG VEB indicated a chronic disease.

2. In most cases, one test on antibodies is not enough to make a diagnosis, therefore, for comparing the results, repeated laboratory tests are needed after 2

weeks, 4 weeks, 1.5 months, 3 and 6 months. The algorithm of dynamic research and its need should be determined only by the attending physician.

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