by cesarean section have a high risk of developing allergic diseases due to lack of contact with the mother's vaginal microflora and disruption of the formation of natural microbial colonization of the child's body. Intestinal microflora takes part in the formation of the immune response and adjusts the immune system, while reducing the risk of developing food allergies, increasing tolerance to food allergens and synthesizing a secretion that covers the mucous membrane and does not allow antigens to penetrate into the bloodstream through the intestinal wall. It also neutralizes pathogens living in the intestines.

Due to disturbances in the composition of the gastrointestinal microflora, the secretion of immunoglobulins A (IgA), which normally prevents the attachment of antigens to the mucous membrane of the digestive canal, decreases, and the permeability of the intestinal wall for macromolecules increases, which provokes the development of allergies. The human body is colonized by a huge variety of bacteria; their number is 10 times greater than the number of human cells.

The microflora of each person has a unique composition, and different diseases are characterized by a deficiency or surplus of certain microorganisms. It has been studied that children suffering from bronchial asthma in combination with allergic rhinitis are characterized by a deficiency of both Bifidobacterium and Lactobacillus. The connection between allergies and bacteria of the genus Clostridium has also been studied. Clostridia regulate the function of immune cells and the permeability of the intestinal wall, which prevents the development of sensitization to allergens.

Most other theories link the increase in the number of allergic diseases to external causes that increase a person's risk of developing allergies (environmental pollution, preservatives in food, cosmetics, and cleaning products, stress). Changes in microflora contribute to metabolic disorders, immune response and susceptibility to disease. The etiopathogenesis of allergies is inextricably linked with the cumulative influence of both external factors and changes and characteristics of the internal microflora of a person.

PARENTERAL VIRAL HEPATITIS: STAGES OF IMPROVING METHODS FOR DETERMINING MAIN MARKERS OF INFECTION

Tishchenko I.[1], Dubinina N.[1], Filimonova N.[1], Koshova O.[1], Samadov B.[2]
[1]National University of Pharmacy, Kharkiv, Ukraine
[2]Bukhara State Medical Institute named after Abu Ali ibn Sino, Bukhara, Uzbekistan[2]
irina2okt@gmail.com

The development and implementation of new laboratory diagnostic methods determine progress in the research and prevention of most infectious diseases, including viral hepatitis. The use of immunochemical methods for the detection of antigens and antibodies (gel precipitation reaction) made it possible to identify the “Australian antigen” (HBsAg), the main marker of the hepatitis B virus (B. Blumberg,

1964). The discovery of this antigen opened a new era in the etiological deciphering of viral hepatitis. Following the identification of hepatitis B, A, E, D and C viruses, new viruses (hepatitis G virus; TTV and SEN) have been identified using new molecular diagnostic methods, which are responsible for the development of hepatitis, previously designated as hepatitis "neither A nor B".

To identify serological markers (antigens and antibodies) of infection with viruses responsible for the development of hepatitis, various methods and diagnostic drugs manufactured by domestic and foreign manufacturers are used. These diagnostic drugs should be more sensitive, highly specific, make diagnosticsfaster and easier, and at the same time be inexpensive. Today, there is no single drug that satisfies all these requirements. However, it is the desire to satisfy them as completely as possible that determines progress in the development of new methods and diagnostic drugs. From the discovery of HBsAg to the present time, there has been an evolution of diagnostic drugs, aimed primarily at increasing their sensitivity and specificity.

The danger of viral hepatitis is determined by high morbidity and mortality, damage to young people, frequent chronicity (with hepatitis C - 70-80% of cases of acute hepatitis C). Hepatitis B and C viruses are the etiological agents of primary liver cancer. Today, the global medical community is already talking about an epidemic of viral hepatitis, which makes obvious the importance of using highly sensitive and specific diagnostic drugs.

Development of immunology and immunochemistry, the emergence of new polymer compounds and discoveries in molecular biology,the creation of new computers and software products has brought laboratory diagnostics of viral hepatitis to a fundamentally new level.

The history of the development of diagnostics of viral hepatitis is inextricably linked with the discovery of new markers of infection. Currently, it is unthinkable to make a diagnosis of a specific viral hepatitis without detecting a set of diagnostic markers. For example, for hepatitis B - determination of HBsAg, IgM anti-HBc, HBeAg, anti-HBe, HBV DNA, anti-HBs;IgG anti-HBc allows you to confirm the “clinical” diagnosis, predict the course, and the effectiveness of treatment and vaccine prevention of hepatitis B.

The development of diagnostics of viral hepatitis is developing in two main directions. The first direction is the creation of complex, highly sensitive technical complexes, which should ensure the quality of research through the introduction of fundamentally new technical means that make it possible to conduct research on samples using highly automated systems. Laboratory combines were created by such well-known companies as: “Abbott” (USA); “Roche” (Switzerland), etc. Such diagnostic systems are used in large medical institutions to conduct mass laboratory tests.

The second direction is the creation of express tests (less than an hour), the implementation of which does not require special equipment, and this direction is one of the priority areas of laboratory diagnostics. In diagnostic preparations that allow the results of testing to be taken into account visually and used for the diagnosis of viral

hepatitis, two variants of the method are used: immunochromatography and dot analysis.

There are two main variants of the method: “flow through” (membrane method 1) and “lateral flow” (membrane method 2). Both variants of the method are based on the interaction of the test antigen with anti-HBs firmly adsorbed on a nitrocellulose membrane. The resulting complex is detected using antiserum against HBsAg labeled with colloidal gold.

In membrane method No. 1, a flow-through version is used, when the blood serum under study and subsequent reaction reagents are introduced into the well of a plastic holder, the bottom of which is a nitrocellulose membrane. Absorbed into the adsorbent located under the membrane, HBsAg reacts with antibodies and is then detected using sequentially added reagents. In the presence of HBsAg, a colored dot forms on the membrane, allowing one to judge the presence of the desired antigen. The presence of a positive control allows us to judge that the study have been successfully carried out.

In membrane method No. 2, all reaction ingredients (except for the test sample) are pre-adsorbed on a nitrocellulose membrane. HBsAg diffuses across the membrane surface, reacting with anti-HBs and other reaction components. If an antigen is present in the test sample, a band is formed indicating its presence. The lateral movement of HBsAg along the membrane allows, in addition to using blood serum, to use other body fluids for testing, including whole blood.

The determination of HBsAg is an important element in the diagnosis and prevention of hepatitis B. The position on the need to use the highest possible sensitivity of the diagnostic drugs used for its detection remains unshakable. The entire history of the development of methods for detecting HBsAg clearly illustrates the desire to achieve maximum sensitivity in detecting this antigen.

However, the sensitivity of fast, instrument-free methods for detecting HBsAg is inferior to the sensitivity of radioimmunoassay and enzyme-linked immunosorbent assay. It was important to determine what is the distribution of antigen concentrations among asymptomatic carriers; is further work to increase the sensitivity of diagnostic drugs justified and what does the introduction of test systems with sensitivity above 0.1 ng/ml provide?

Partially the answer to these questions is provided by the results of determining the concentration of HBsAg, obtained in France when studying the blood sera of asymptomatic carriers of the antigen. It has become known that in the majority of asymptomatic carriers HBsAg circulates in fairly high concentrations. Thus, more than 60% of them had an antigen concentration exceeding 50 ng/ml. At the same time, in some (about 4%) carriers, HBsAg can circulate in concentrations less than 0.5 ng/ml. Long-term observations of changes in the ratio of individuals with high and low concentrations of HBsAg, carried out later in Europe, established a gradual decrease in the number of donors carrying HBsAg with a high concentration of the antigen in the blood. Identification of cases of hepatitis B after transfusion of “seronegative” blood for HBsAg indicates the need for further work on the creation and implementation in

practical healthcare of antigen detection methods that are highly sensitive while maintaining high specificity.

In contrast to the detection of HBsAg in asymptomatic carriers, in patients with acute hepatitis B the level of antigen concentrations is higher, which makes it possible to detect the antigen when using diagnostic drugs with a sensitivity of 0.5 ng/ml in more than 95% of patients with hepatitis B in the acute period of the disease.

An equally important task is the identification of anti-HCV. In contrast to the detection of HBsAg, methods based on the interaction of HCV antigens (obtained using recombinant technology or through chemical synthesis) with labeled antibodies have been developed and are used to detect anti-HCV.

To detect anti-HCV, antigens encoded by different zones of HCV RNA are used. Such tests are easy to use and allow the differential determination of antibodies to the nuclear and non-structural (NS3 + NS4 + NS5) proteins of the HS virus. In addition to the qualitative result of anti-HCV testing (whether anti-HCV is present or not), such a test allows one to determine early anti-NS3 and anti-NS4 antibodies as well as anti-HCV core antibodies, which are located at different points on the ridge, which plays the main role in detecting the hepatitis C virus at an early stage. The provided possibility of separate testing of antibodies to HCV allows one to obtain information important for the doctor to distinguish between acute and chronic hepatitis C.

Today, the diagnosis of hepatitis B and C does not require any complex laboratory or instrumental studies, and is also not particularly expensive. The actual confirmation of the diagnosis is the detection of markers of HBV or HCV infection in the patient's blood. Detailed diagnosis involves an in-depth serological examination to identify specific antigens of the virus or antibodies to them, as well as determination of the viral load using the polymerase chain reaction (PCR).

The activity and stage of the disease are currently determined using non-invasive laboratory (FibroTest, FibroMax) or instrumental (FibroScan, ultrasound elastometry) research methods that have replaced biopsy. However, timely diagnosis of latent forms of parenteral hepatitis still remains relevant.

One of the extremely important tasks of laboratory diagnosis of viral hepatitis is the etiological decoding of acute cases and the identification of latent cases. This question is important, since the treatment tactics and implementation of preventive measures depend on the answer to it.

MODERN IMMUNOLOGICAL METHODS OF DIAGNOSTIC DISEASE OF COVID 19

Yeromenko R.F., Dolzhykova O.V.
National University of Pharmacy, Kharkiv, Ukraine
klinlab@nuph.edu.ua