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FREQUENCY OF OCCURRENCE OF CHRONIC VIRAL HEPATITIS AMONG THE POPULATION OF THE REPUBLIC OF AZERBAIJAN ACCORDING TO THE DATA ON CIRCULATION

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1,611 people who applied to the medical center “Medikus Clinic” in Baku were examined, 836 of them were men and 775 women. Verification of viral hepatitis B and viral hepatitis C was carried out based on the determination of the hepatitis B virus surface antigen using enzyme immunoassay and hepatitis C virus by polymerase chain reaction on the immunochemical analyzer Beckman Coulter Unicel DXi 800. Of the total number of examined patients, hepatitis B was detected in 642 patients (39.85 %), of which 24.8 % were men and 15.02 % were women. The analysis of the data revealed a high incidence of the disease in people under 40 years of age with a sharp decrease in the indicator after 40 years and a minimum value after 60. In patients with hepatitis C without regional differences, an increase in the incidence of the disease was detected in the age range from 30 to 60 years. In the 60≤ group, there was a decline in the disease in men. It was found that the patients were mainly concentrated in Baku, then in the regions of Azerbaijan and in Sumgait. Unlike age, the male sex has always retained its importance as a risk factor. Chronic types of viral hepatitis B and viral hepatitis C were more common in people of working age.

Key words: chronic hepatitis B, chronic hepatitis C, age dynamics, men, women

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ЧАСТОТА ВИПАДКІВ ХРОНІЧНИХ ВІРУСНИХ ГЕПАТИТІВ СЕРЕД НАСЕЛЕННЯ РЕСПУБЛІКИ АЗЕРБАЙДЖАН ЗА ДАНИМИ ЗВЕРНЕНЬ

Було обстежено 1611 осіб, які звернулися до медичного центру «Medikus Clinic» м. Баку, з них було 836 чоловіків та 775 жінок. Верифікація вірусного гепатиту В та вірусного гепатиту С проводилася на підставі визначення поверхневого антигену вірусу гепатиту В за допомогою імуноферментного аналізу та вірусу гепатиту С методом полімеразної ланцюгової реакції на імунохімічному аналізаторі Beckman Coulter Unicel DxI 800. Із загальної кількості обстежених гепатит В було виявлено у 642 пацієнтів (39,85 %), з яких 24,8 % були чоловіки, а 15,02 % – жінки. При аналізі даних була виявлена висока частота хвороби у осіб до 40 років з різким зниженням показника після 40 років та мінімальним значенням після 60 років. У пацієнтів з гепатитом С без регіональних відмінностей виявлено зростання частоти виявлення хвороби у віковому діапазоні від 30 до 60 років. У групі 60 спостерігався спад хвороби у чоловіків. Встановлено, що хворі здебільшого були сконцентровані у м. Баку, потім у районах Азербайджану та у м. Сумгаїт. Незалежно від віку, чоловіча стать завжди зберігала своє значення як фактор ризику. Хронічні види вірусного гепатиту В та вірусного гепатиту С частіше зустрічалися в осіб працездатного віку.

Ключові слова: хронічний гепатит В, хронічний гепатит С, вікова динаміка, чоловіки, жінки.

According to the World Health Organization (WHO), chronic viral hepatitis is a global health problem for most countries of the world. Viral hepatitis B (HBV) and C (HCV) are the most common among them. In 2015 alone, 71 million cases of chronic infections and 400.000 deaths due to HCV were registered in the world [2, 5]. These data indicate that viral hepatitis has already grown from a medical problem into a medical and social problem that requires urgent participation of responsible state structures in its solution [10]. This served as the basis for WHO's adoption of a Global Health Strategy aimed at eliminating viral hepatitis [6, 7, 8]. According to WHO experts, a significant increase in the prognostic role of viral hepatitis is expected worldwide and it will take priority over the human immunodeficiency virus (HIV, HIV infection) with the development of acquired immune deficiency syndrome (AIDS) and tuberculosis [8, 9, 12]. The number of carriers of these viruses worldwide varies widely between 100–200 million people. Such variability depends on climatic and geographical living conditions, social status, ethnic characteristics and many other factors. The results of individual studies indicate that living not only in different climatogeographic conditions, but also in the same region does not guarantee the identity of identifying persons with HBV and HCV [3, 5].

In addition to the medical and social, an assessment of this disease from a clinical point of view is of no small importance, namely, the study of the effect of chronic viral hepatitis on metabolic processes in the body, to which a number of studies are devoted. The fact of registration of clinical symptoms of diabetes mellitus in the initial stages of acute HBV and HCV has been established. It is proposed to consider viral hepatitis as a factor contributing to the manifestation of this disease [1, 7, 13]. If we compare with the general population, this association is registered 6–10 times more often compared with patients without

HBV and HCV. The reason for this trend is that extrahepatic replication of HBV and HCV takes place, which, apparently, causes the development of systemic damage in these infections. This idea is suggested by the detection of HBV antigens in replicative and integrated forms, in acinar and endocrine cells of the pancreas, and HBsAg in pancreatic secretions [8]. The significance of chronic HBV also lies in its consequences – the formation of liver cirrhosis and hepatocellular carcinoma. Factors contributing to the development of the latter include age, male sex, alcohol consumption, co-infections, prolonged elevated levels of cytotoxicity, registration of HBV antigen in plasma in the presence of viremia. It is important that insulin resistance also leads to increased inflammatory-necrotic changes in the liver and the subsequent formation of steatosis in 35–81 % of patients with HBV and HCV [1, 4,7].

The purpose of the study was to identify the frequency of cases of hepatitis B and C among the population of the Republic of Azerbaijan according to the data of circulation.

Material and methods. 1,611 people who applied to the medical center were examined in Medikus Clinic in Baku, of which there were 830 men, and 781 women, and the average age was 41.25 ± 0.6 42.7 ± 0.7 , respectively. All the examined persons were divided into age groups: 18–29, 30–39, 40–49, 50–59 and $60 \leq$. To form a reliable idea of the frequency of cases of chronic HBV and HCV among the population of different regions, groups of people living in the cities Baku, Sumgait, as well as in various regions of our country were identified. In Baku, the ratio of men and women was 461 and 410 people, and the average age was 40.45 ± 1.1 and 41.75 ± 0.9 years, respectively. Among the people living in Sumgait there were 33 men and 36 women, with an average age of 41.0 ± 2.1 and 43.4 ± 1.4 years, respectively. Among people from different regions of the Azerbaijan Republic, the ratio of men and women was 303 and 307, and the average age was 42.7 ± 1.1 and 44.8 ± 1.0 years, respectively. The above allows us to conduct a comparative analysis of the frequency of occurrence of HBV and HCV both in different regions of Azerbaijan and in different age groups. Verification of hepatitis B and C was carried out on the basis of determination of the hepatitis B virus surface antigen (HBsAg) using enzyme immunoassay (ELISA) on the Unicel dxi immunochemical analyzer 800 Beckman Coulter. Polymerase chain reaction (PCR) was used to confirm the presence of HCV antigen and was carried out on the device “Rotor Qene Q” (Germany). Statistical processing of the material was carried out using the analytical program Microsoft Excel 2010 using the Student's t-test, the Mann-Whitney U-test depending on the correctness of the distribution of the series, as well as correlation analysis using the Pearson double criterion. The average value (M), the error of the average (m), the level of statistical confidence (p) were calculated, with a value of $P < 0.05$, the results were evaluated as reliable.

Results of the study and their discussion. At the initial stage of the analysis of the results obtained, we focused on the overall indicators without highlighting the patient's region of residence. Of the total number of examined persons, 39.85 % had hepatitis B. Of these, males accounted for 24.8 %, and females – 15.02 %. It is obvious that chronic HBV was significantly more often registered in males. Figure 1 shows the frequency of viral hepatitis in the Azerbaijan Republic, excluding the regions of residence. According to the data presented, it can be concluded that in men in 2 age groups – 18–29 and 30–39, with the maximum indicator in the 30–39-year-old group, the incidence of HBV was significantly higher compared to groups older than 40 years. Among women, the trend was similar, with a significantly low incidence of the disease compared to men.

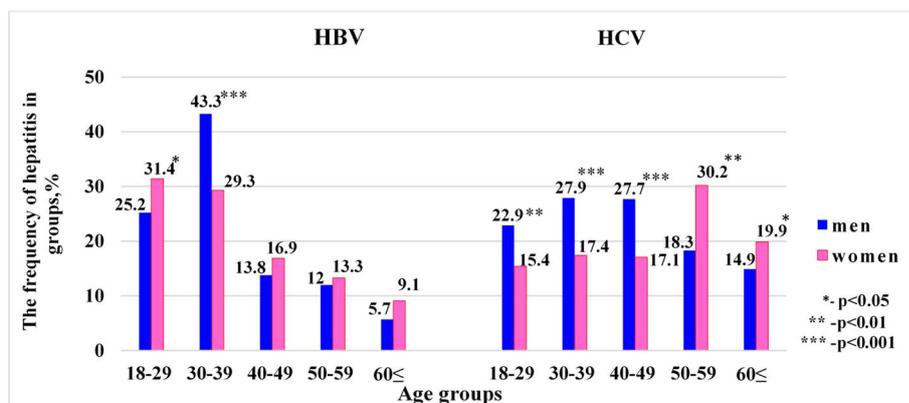


Fig. 1. The frequency of occurrence of viral hepatitis in the Azerbaijan Republic without taking into account the regions of residence

After 40 years, there was a decline in the incidence of the disease without gender difference. At the same time, the excess of cases of the disease in this age range in women compared to men was statistically unreliable. In general, we found confirmation in certain age groups of only the role of the male sex as a risk factor (RF) contributing to the increase in the prevalence of HBV. The prevalence rate of HCV in the general population was 60.15 %, of which men accounted for 27.06 %, and women – 33.08 % of cases. As can be seen from the same figure, in the first 3 age groups, so up to 50 years, men had a significantly high

frequency of HCV with maximum values in the 2nd and 3rd age groups, compared with women. In women, the incidence of the disease in the corresponding age groups was similar, with an unreliably low value in group 1. Starting from the age of 50, there was a significant decrease in cases of the disease in men, both in comparison with previous groups, and with a significant gender difference within the group in favor of women.

54.31 % of Baku residents were diagnosed with viral hepatitis, 28.9 % of men and 25.32 % of women.

As follows from fig. 2, the maximum value of the studied indicator for HBV in men falls at the age of 30–39, and in women – 18–29 years with significantly high values of the indicator in men. The influence of risk factors such as gender and age was not confirmed here. A similar trend in relation to RF was observed in women. As for chronic HCV, among the residents of Baku, it was recorded in 34.08 % of the examined patients, men – 15.77 %, women 18.31 %.

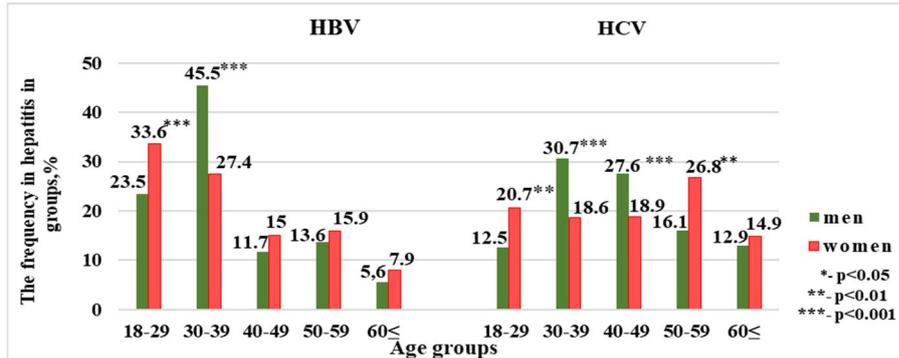


Fig. 2. The frequency of occurrence of viral hepatitis among residents of Baku city

It is obvious from Figure 2 that up to 50 years of age of the examined persons played a certain role in the increase in the frequency of HCV registration. This partially confirms the data presented by us on the pathological influence of age, and

here we can expect an increase in the registration of complications characteristic of the disease (fibrosis, cirrhosis and neoplasms) in the future. A similar trend in this age range was observed in female patients.

Now let's consider the same indicators for people living in Sumgait. The number of patients with HBV was 3.39 % of the total, of which men were 2.05 %, women – 1.34 %. Figure 3 shows the frequency of viral hepatitis among residents of Sumgait. In patients with HBV, the highest rates of disease registration were observed up to 40 years with significantly high values in women in the 18–29 group and in men – 30–39 years with the maximum value of cases. After 40 years, a sharp, highly reliable decrease in cases of the disease was revealed. This trend, but without gender difference, was observed in patients in the 60≤ group.

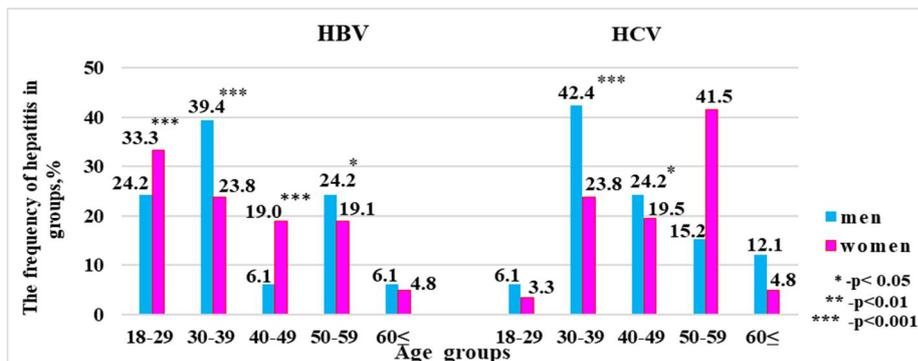


Fig. 3. The frequency of occurrence of viral hepatitis among residents of Sumqayit city

The number of patients with HCV was 4.6 %, men – 3.30 %, women – 1.30 %. The maximum incidence of the disease in men was observed in the 30-39 group, and in women in 50–59 years with a highly significant gender difference. The minimum incidence of

the disease without gender difference was in young patients (18–29 years old) and in women in the 60≤ group.

Thus, the analysis of the obtained data on the prevalence of viral hepatitis in Sumgait showed a relatively high incidence of cases of HCV compared to HBV. In both forms of hepatitis in the 60 – year-old group, there was a sharp decline in cases of the disease compared to other groups, which suggests the inconsistency of age as the RF of viral hepatitis in this case.

Among patients from different regions of Azerbaijan, HBV was registered in 20.24 % of all persons with established viral hepatitis; the proportion of men was 13.2 %, and women – 7.01 %.

Figure 4 shows the frequency of viral hepatitis among residents of the districts of Azerbaijan. The results of the analysis of the age dynamics of the occurrence of HBV in men revealed the absence of age

influence on the frequency of cases of the disease, and in women there was a feedback, most pronounced in the age range of 30–59 years.

The frequency of HCV registration in patients from the districts was 21.6 %, of which men – 9.31 %, women – 12.29 %.

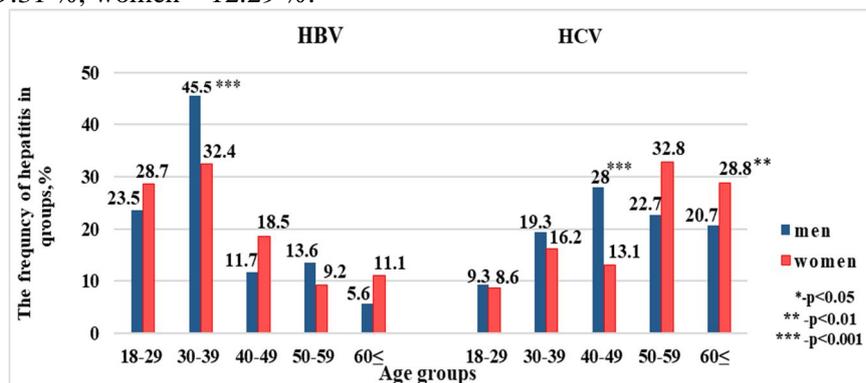


Fig. 4. The frequency of occurrence of viral hepatitis among the inhabitants of regions of the Azerbaijan Republic

As can be seen from the presented figure, a statistically significant relationship between age and the frequency of registration of HCV in men remained up to 50 years. Among women, the incidence of HCV cases with increasing age statistically significantly increased from 8.6 ± 1.9 % in the 18–29 age group to 32.8 ± 3.3 % in the 50–59 age group.

The relevance of our research work, its practical and theoretical significance for healthcare not only in our republic, but also on an international scale is due to the fact that according to WHO data, 240 million patients worldwide suffer from chronic HBV, 130–150 million from chronic HCV. Mortality due to these diseases is increasing, which causes 1.45 million deaths per year [10, 11]. Due to the fact that the above-mentioned viral hepatitis cause the development of severe clinical forms, lead to the formation of life-threatening complications, as well as taking into account the predominantly severe clinical course, they are included in the top ten most severe infections found in world practice [8]. It has been established that HBV registration is highest in countries with a low economic level of development, both in the social and industrial spheres. Another, no less important problem is that in these countries with a low social and economic level of development, the majority of the population refuses timely examination and treatment. This leads to late detection of the disease and, accordingly, delayed treatment, its severe course, which in turn contributes to the formation of life-threatening complications, comorbid pathologies [12, 13]. Based on the above, the Global Strategy of the Health Sector is aimed at applying a more aggressive approach to these diseases with a view to their widespread elimination on all continents. At its first stages, it implies a reduction in the frequency of registration of these diseases to 90 %, which will undoubtedly be accompanied by a decrease in mortality and disability due to these diseases. Among these infectious diseases, HCV deserves the most attention, because in 80 % of cases, its transition to a chronic form was noted, and if a patient has HBV, this process of transition to a chronic form was noted in 5–10 % of the total number of sick people [11]. The main risk factors include heterosexuality, homosexuality, intravenous injections, drug addiction, etc. For example, the HBV pathogen enters the body mainly by injection, and similar cases with HCV are noted 10 times less often – in 3 % of cases. The five-year survival rate with compensated HBV is 71–84 %, and with decompensated – 14–25 % [2]. According to the data of the AIDS Monitoring Center of the Azerbaijan Republic, the frequency of HCV registration in people with immunodeficiency is 71–84 %, and HBV is 10.2 %, which is 6 times more. In the clinics of Baku HBV is detected two times less often, compared with HCV, which is consistent with the data of our study. According to the data on the number of visits to clinics in Baku from 2003 to 2009, the registration of HBV hepatitis per 100,000 population increased from 1.73 to 5.33. However, already in 2012 there was a 2 – fold decrease to 2.26 per 100,000 populations [8]. The dynamics of HCV change was as follows: 0.58 (2003), 3.88 (2009) and 1.96 (2012) per 100,000 populations. In our study, HCV was registered 1.5 times more often than HBV. The frequency of acute HBV registration in Baku decreased by 5 times by 2013. The detection of HBV and HCV markers in 8 regions of the Republic of Azerbaijan established that HBsAg occurred in 3.6 % of cases, and anti HCV in 3.2 % of cases. In 2018, there was a sharp decrease in the registration of viral hepatitis by 5 times, compared with 2009. Countries such as Pakistan, Sudan, and Burkina Faso are in urgent need of effective measures to combat HBV today. Taking into account the frequency of combination of COVID 19 infection with viral hepatitis B and C, their relevance for the Republic of Azerbaijan naturally looks like, which must be taken into account for adequate prevention [8]. It is obvious that only in this case it is possible to achieve the desired result in the field of disease prevention.

To develop a correct and scientifically sound approach to the elimination of viral hepatitis B by 2030, first of all, it is necessary to study the main epidemiological indicators that can contribute to achieving the goal of the World Health Organization, which includes the elimination of chronic viral hepatitis B by this date [11]. A large-scale study of their epidemiology and risk factors is underway all over the world to develop primary and secondary prevention measures and achieve the goal set out in the WHO Global Strategy [11, 13].

We have identified certain gender characteristics, which is important for the development of life-threatening complications. In addition, we found that the patients were mainly concentrated in Baku, less in the regions of Azerbaijan and in Sumgait. These differences can be justified only when the main risk factors are studied. To date, we can say that the frequency of viral hepatitis registration is relatively significant in our region and predominates in young people, which is unfavorable in prognostic terms. This leads to the formation of large medical and socio-economic problems in the future and requires state support for their successful solution. We believe that our research, conducted for the first time in such a volume, among the population of the Azerbaijan Republic will allow us to scientifically substantiate the need for measures to achieve the goal set by WHO for the health of all countries [7, 11].

Conclusions

1. The population of the Azerbaijan Republic is characterized by a relatively high incidence of chronic HBV and HCV.
2. Chronic HBV and HCV were more often registered among the population of Baku and relatively less frequently in the regions of the Azerbaijan Republic and in Sumgait.
3. Unlike age, the male sex has always retained its importance as a risk factor.
4. Chronic HDV and HCV were more common in people of working age.

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