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Original Research

Some features of a general blood test in patients with Hepatitis B virus and Hepatitis C Virus -Associated Hepatocellular Carcinoma

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ABSTRACT:
Hepatocellular carcinoma is the sixth most common cancer in the world, accounting for 7% of all cancers. Hepatocellular carcinoma is the fourth leading cause of death among oncological diseases. This article highlights some aspects of the general blood test in patients in three groups: hepatitis B virus -associated hepatocellular carcinoma, hepatitis C virus -associated hepatocellular carcinoma, as well as in the control group of patients with hepatocellular carcinoma and negative markers of viral hepatitis.
Key words: hepatitis B virus, hepatitis C virus, hepatocellular carcinoma, general blood test

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INTRODUCTION

Hepatocellular carcinoma is the most common liver cancer histotype. Hepatocellular carcinoma accounts for 80% of all cases of liver cancer [1]. Hepatocellular carcinoma is the sixth most common type of cancer in the world, accounting for 7% of all cancers. Hepatocellular carcinoma is the fourth leading cause of death among oncological diseases [2] and is one of the types of cancer with the highest mortality rates in the world [3]. Liver cancer is a serious public health problem in developing countries.

The highest incidence of hepatocellular carcinoma in East Asia is 17.7 per 100,000 (26.8 for men and 8.7 for women), followed by Micronesia, North Africa, Southeast Asia and Melanesia. The incidence in South-Central and West Asia was 2.5 per 100,000 and 4.0 per 100,000, respectively. The incidence rate in North America was 6.6 per 100,000 and 5.3 per 100,000 in Western Europe. Mortality rates reflect incidence rates [4]. In the United Kingdom, both the incidence and mortality of hepatocellular carcinoma have risen sharply. Hepatocellular carcinoma indicators increased from 2.7 per 100,000 in 1997 to 8.8 per 100,000 in 2016 for men and from 0.8 per 100,000 to 2.2 per 100,000 for women. [5]. In North and Central Europe, North America and Latin America, unfavorable trends are observed [6].

Hepatocellular carcinoma is the fifth most commonly diagnosed cancer in men and the ninth in women [7]. The prevalence of hepatocellular carcinoma among men usually causes their lesions and chronic liver diseases to develop more frequently, in particular, because of the combined effects of alcohol and smoking [8]. It should be noted a downward trend in the incidence and incidence of liver cancer [9].

The most common causes of hepatocellular carcinoma are chronic infections of hepatitis B virus and hepatitis C virus [10, 11, 12]. Although hepatitis B virus -associated hepatocellular carcinoma is the largest proportion of patients with hepatocellular carcinoma in East Asia [13, 14].

An additional argument in favor of the importance of viral hepatitis as an etiological factor of hepatocellular carcinoma is that successful antiviral therapy significantly affects the possibility of tumor development: 7.8 and 7.1% with hepatitis C virus and hepatitis B virus infections, respectively [15], reduce

the five-year cumulative risk of hepatocellular carcinoma in patients treated. However, even in patients treated for hepatitis C who initially had severe fibrosis or cirrhosis of the liver, a tumor can develop, and therefore such patients should undergo regular screening examinations for hepatocellular carcinoma [16].

MATERIALS AND METHODS

The work included data from a retrospective and prospective analysis of case histories of patients diagnosed with hepatocellular carcinoma who were hospitalized at the Republican Specialized Scientific and Practical Medical Center for Oncology and Radiology of the Republic of Uzbekistan from 2016 to 2019.

Patients were divided into 3 groups. Group 1 consisted of patients with hepatocellular carcinoma and positive HBsAg tests. Group 2 included patients with hepatocellular carcinoma and positive hepatitis C virus tests. Group 3 included patients with hepatocellular carcinoma, in which serological markers for viral hepatitis were negative.

The criteria for inclusion in-group 1 were the presence of hepatocellular carcinoma, confirmed by and computed tomography and / or magnetic resonance imaging and histological confirmation of the diagnosis, as well as the presence of HBsAg.

Exclusion criteria were negative markers of hepatitis B virus, the presence of concomitant hepatitis C, human immunodeficiency virus, under the age of 18 years.

The inclusion criteria in-group 2 were the presence of hepatocellular carcinoma, confirmed by ultrasound and computed tomography and / or magnetic resonance and histological confirmation of the diagnosis, as well as positive results of an enzyme-linked immunosorbent assay for anti-hepatitis C virus and / or positive values of the polymerase chain reaction to hepatitis C virus.

Exclusion criteria were negative markers of hepatitis C virus infection, the presence of concomitant hepatitis B, human immunodeficiency virus, age under 18 years.

The criteria for inclusion in-group 3 were the presence of hepatocellular carcinoma, confirmed by ultrasound and computed tomography and / or magnetic resonance and histological confirmation of the diagnosis of negative markers for viral hepatitis and human immunodeficiency virus, under the age of 18 years.

The average age of patients in-group 1 was 46.7 ± 2.18 years. Men were 27 (72.97%), women were 10 (27.03%).

The average age of patients in-group 2 was 64.22 ± 1.27 years. Men were 25 (80.77%), women were 5 (19.23%).

The average age of patients in-group 3 was 54.41 ± 2.63 years. There were 11 men (35.48%), 20 women (64.52%).

The study included the results of a general blood test, in addition, all patients diagnosed with hepatocellular carcinoma in all patients were confirmed by ultrasound methods, computed tomography and / or magnetic resonance and histologically.

The hepatocellular carcinoma stages were established in accordance with the international classification according to Tumor, nodus and metastasis classification, adopted in our country.

Statistical analysis was performed using Excel 16.0 programs. For each series of results, the arithmetic mean (M), the error of the mean (m), were calculated. In the tables, the results are presented as M ± m. Comparison of two samples was carried out using the xi-square. When comparing the average values, the Student t-test was used. For the level of reliability of statistical indicators, $p < 0.05$ was taken.

RESULTS AND DISCUSSIONS

Group 1 with hepatocellular carcinoma and positive markers of hepatitis B virus infection comprised 37 patients, in-group 2 with hepatocellular carcinoma and positive markers of hepatitis C virus infection, there were 30 patients and group 3 included 31 patients with hepatocellular carcinoma and negative markers of viral hepatitis (Figure 1).

Figure 1. The distribution of patients into groups based on the data of markers of hepatitis B virus and hepatitis C virus infection

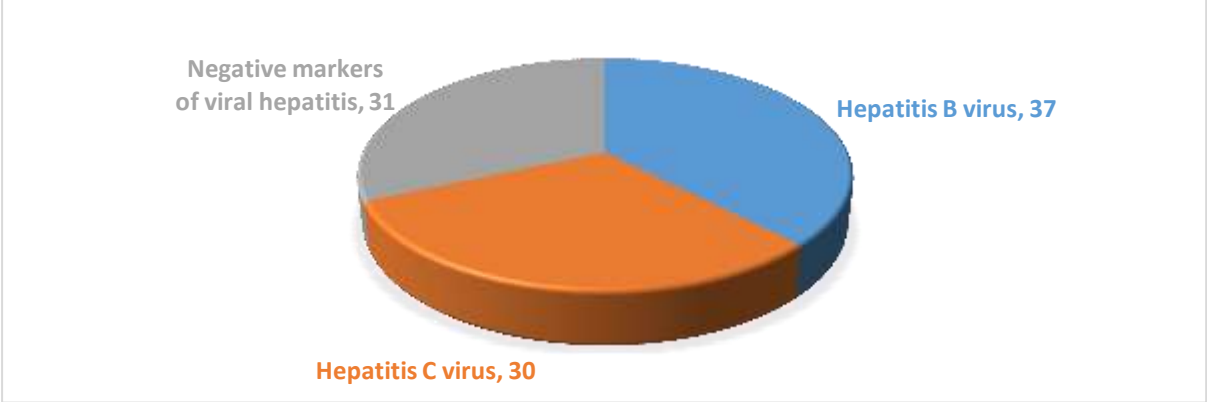


Table 1. Distribution of patients by gender and age

Groups	Sex				Age M±m
	Male		Female		
	n	%	n	%	
1 group n=37	27	72,97	10	27,03	46,7±2.18
2 group n=30	25	83,33	5	16,67	64,22±1.27
3 group n=31	11	35,48	20	64,52	54,41±2.63
Common n=98	63	62,77%	35	37,23%	52,31±1,32

During the analysis, hepatocellular carcinoma more often occurred in men - 59 people (62.77%) than in women 35 (37.23%) people.

The number of men prevailed in all groups with viral hepatitis. However, in the group of patients without viral hepatitis, women had a numerical advantage (Table 1).

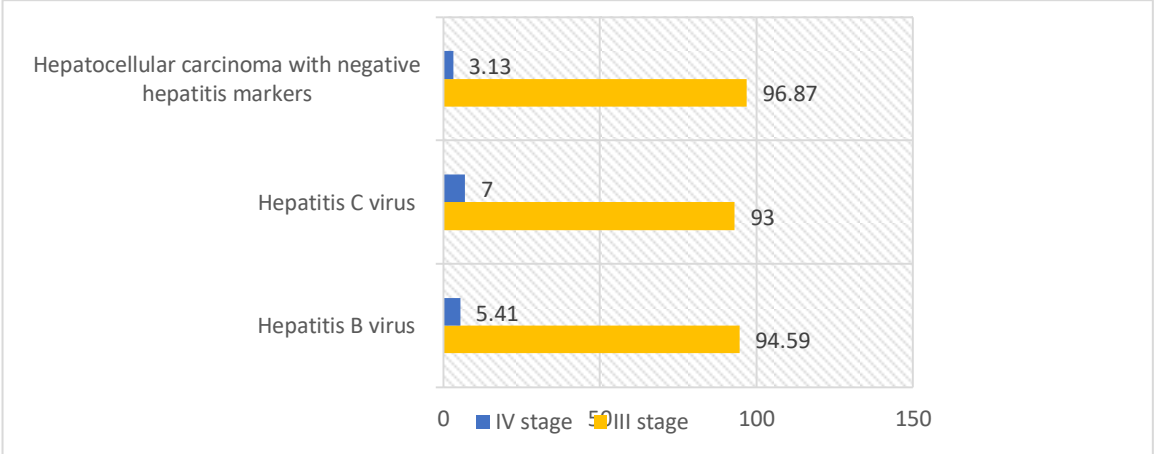
In the group of patients with hepatocellular carcinoma associated with hepatitis B virus, the number of patients older than 50 years was only 45.95%, that is, more than half of the cases of hepatocellular carcinoma in this group occurred in the age range of 24-50 years. This is due to early hepatitis B virus infection. Moreover, hepatocellular carcinoma associated with hepatitis C virus infection practically does not occur before the age of 50, and the incidence of hepatocellular carcinoma increases, reaching a maximum by 56-60 years. In the group of patients without hepatocellular carcinoma, patients over 50 years of age accounted for (64.52%). It should be noted that 70% of women in the hepatocellular carcinoma group without hepatitis were over 45 years old, that is, they were in the premenopausal or climatic period when estrogen reduction occurs. Thus, hepatocellular carcinoma associated with hepatitis B virus infection was detected at an earlier age compared to patients in the hepatocellular carcinoma associated with hepatitis C virus infection ($p<0.05$) and in the group of patients with negative markers of viral hepatitis ($p<0.05$). Moreover, the difference in age indices in the group of patients with hepatocellular carcinoma, associated hepatitis C virus infection and in the group of patients without markers of viral hepatitis was not statistically significant.

At the time of diagnosis of hepatocellular carcinoma, cirrhosis was observed in 67% of cases in the general group. It should be noted that cirrhosis was more common in the group with hepatitis B virus infection (75.68%) and hepatitis C virus infection (83.33%), while in the group with hepatocellular carcinoma with negative viral markers for cirrhosis accounted for only 38.71% ($p <0.05$). Nevertheless, in 24.32% of patients in the group with hepatitis B virus infection and in 16.67% of patients in the group with hepatitis C virus infection, hepatocellular carcinoma developed without liver cirrhosis, which explains the effect of the presence of hepatitis B and C viruses themselves in hepatocytes on hepatocellular carcinoma oncogenesis.

In patients with hepatocellular carcinoma in patients with cirrhosis of the liver, in most cases there was a Child-Pugh class A and B. Moreover, in the hepatocellular carcinoma group against the background of cirrhosis of the liver, hepatitis B virus etiology in class B was higher in percentage terms than in the group with hepatocellular carcinoma against the background of liver cirrhosis of hepatitis C virus etiology.

Most TNM patients were stage III. This indicates a rather late diagnosis of hepatocellular carcinoma (Figure 2)

Figure 2. Distribution of patients by stages according to Tumor, nodus and metastasis classification



Data from the results of a general blood test are presented in table 2

Table 2. The results of indicators of the general analysis of blood in the studied groups

Groups Indicators M±m	Hepatitis B virus +hepatocellular carcinoma n=37	Hepatitis C virus +hepatocellular carcinoma n=30	Hepatocellular carcinoma with negative hepatitis markers n=31	Normal rates
Hemoglobin (g/l)	112,92±3,05	113,63±2,83	110,9±3,13	130-160
Erythrocytes (10^{12}/l)	4,01±0,14	3,98±0,11	4,0±0,11	4,0-5,5
Segmented (%)	4,84±0,33	5,4±0,42	5,39±0,4	1-6
Stab (%)	67,24±0,99	66,07±0,82	64,13±1,54	47-72
Eosinophils (%)	3,03±0,25	3,43±0,33	3,26±0,25	0,5-5
Monocytes (%)	2,81±0,18	2,7±0,26	2,84±0,18	3-11
Lymphocytes (%)	21,86±1,09	22,13±0,81	25,61±2,39	19-37
Leukocytes (10^9/l)	7,69±0,78	7,0±0,57	7.02±0,65	4,0-9,0
Platelets (10^9/l)	221,46±12,32	205,6±10,34	260,65±9,73	180-320

Patients' total blood counts were on average within physiological fluctuations, with the exception of low hemoglobin levels. So in the group with hepatitis B virus -associated hepatocellular carcinoma, mild anemia (90-110 g / l) was found in 18.92% of cases, moderate anemia (89-70 g / l) in 16.22% of cases. In the group with hepatitis C virus -associated hepatocellular carcinoma, mild anemia (90-110 g / l) occurred in 33.33% of cases, moderate anemia (89-70 g / l) in 6.67% of cases. in the group with hepatocellular carcinoma without hepatitis, mild anemia (90-110 g / l) occurred in 25.81% of cases, moderate anemia (89-70 g / l) in 16.13% of cases. A decrease in the number of red blood cells was observed with hepatitis B virus -associated hepatocellular carcinoma in 35.14%, with hepatitis C virus -associated hepatocellular carcinoma in 50% and in the group with hepatocellular carcinoma without viral hepatitis in 48.39% of cases, respectively. However, there were no statistically significant differences in the levels of hemoglobin, erythrocytes in the groups ($p > 0.05$).

Despite the fact that the average number of leukocytes and lymphocytes was within the physiological norm, in 24.32% and 29.73% of patients with hepatitis B virus -associated hepatocellular carcinoma, in 23.33% and 36.67% of patients in the group with hepatitis C virus - associated hepatocellular carcinoma and 22.58% and 35.48% of patients in the group with hepatocellular carcinoma and negative markers of hepatitis observed leukocytosis and lymphopenia, respectively. What was associated with the phenomena of hypersplenism and bacterial complications. At the same time, there were no statistically significant differences in these indicators in the groups ($p > 0.05$).

In the frequency analysis, thrombocytopenia occurred in 18.92% of cases in the group with hepatitis B virus -associated hepatocellular carcinoma, in 40% of cases in the group with hepatitis C virus -associated hepatocellular carcinoma, and only 6.62% of cases in the group with hepatocellular carcinoma and negative hepatitis markers. Moreover, in the group, when comparing the level of platelets in the groups with hepatitis B virus and hepatitis C virus -associated hepatocellular carcinoma, there were no statistically significant differences ($p > 0.05$). However, when comparing the level of platelets in the group with negative markers with groups of hepatitis B virus - and hepatitis C virus -associated hepatocellular carcinoma, the platelet level in the latter was statistically lower than in the third group ($p < 0.05$).

CONCLUSION:

1. Hepatocellular carcinoma is more common in men than in women. At the same time, men were more likely to meet in-groups with viral hepatitis, while women predominated in the group of patients with negative viral markers. It should be noted that 70% of women in the hepatocellular carcinoma group without hepatitis were over 45 years old, that is, they were in the premenopausal or climatic period when estrogen reduction occurs.
2. Hepatocellular carcinoma in patients with hepatitis B virus met statistically at an earlier age compared with groups of patients with hepatitis C virus -associated hepatocellular carcinoma and hepatocellular carcinoma without hepatitis. This is because hepatitis B virus infection usually occurs at an early age.
3. Cirrhosis was statistically more often observed in-groups with viral hepatitis compared with the group of patients with hepatocellular carcinoma.
4. A downward trend in the number of hemoglobin and erythrocytes was observed in all three groups, however, no statistically significant differences were detected
5. Some patients in all three groups had a tendency to leukocytosis and lymphopenia associated with the phenomena of hypersplenism and bacterial

complications. However, no statistically significant differences were found.

6. The platelet count in the hepatocellular carcinoma groups with viral hepatitis was statistically lower compared with hepatocellular carcinoma non-viral etiology.

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CONSENT

Written informed consent was obtained from all participants of the research for publication of this paper and any accompanying information related to this study.

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CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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