Journal scientific and applied research, vol. 11, 2017
Association Scientific and Applied Research
International Journal

Original Contribution ISSN 1314-6289

CARCINOMA HEPATIS AND BLOOD GROUP AFFILIATION

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ABSTRACT: *The article discusses the results of a study of 94 patients (72 male and 22 female) suffering from Ca hepatis. The connection between the condition and the blood group affiliation according to the ABO systems and the Rhesus factor is traced. A comparison with the control group of healthy Bulgarian population reveals a significant increase ($p<0,01$) in the number of patients with blood type A, and a smaller increase in AB blood type. A decrease in the number of patients is seen in the other groups, especially group 0 ($p<0,01$). The studies show that male patients predominate (3,23 times more than the female)), which supports the findings of previous documented research. In the Rh system the values are almost equal to those of the control group. We assume that belonging to blood type A might be one of the risk factors in the development of Ca hepatis.*

KEY WORDS*: blood type systems ABO and Rhesus factor, Ca hepatis*

Among the causes for an onset of a disease are not only the environmental factors and the way of life, but also the hereditary features of the organism. In order to get a better understanding of the impact of these factors a study was undertaken of the relation between blood type and the appearance of Ca hepatis in patients. On the basis of previously researched socially-significant diseases it was assumed that patients' blood type affiliation to AB0 system can turn out to be, probably indirectly, one of the risk factors for the outbreak and development of the disease. The conducted studies confirmed a higher disease incidence in patients with blood type A as compared with the control group of healthy people.

Aim of the study:

To find out if the patients' blood type affiliation to AB0 system and Rhesus factor is linked to the appearance and development of Ca hepatis.

Material and methods:

The study was performed on 94 patients suffering from Ca hepatis (72 male and 22 female). The patients' blood group and Rhesus factor were identified and the results were compared with the data obtained from a control group of healthy representatives of the Bulgarian population [1]. The patients were diagnosed and treated in the oncology ward of the Fifth City Hospital in Sofia. The comparison was made by means of χ^2 criterion.

Results and discussion:

The data of the study are presented in table 1 and figure 1 and 2.

Table 1. Frequency of the blood types from systems AB0 and Rhesus factor in patients with Ca hepatis and the control group (%)

Blood types		**O**	**A**	**B**	**AB**	**Rh+**	**Rh-**
Patients with Ca hepatis **n 94**	n	9	65	12	8	80	14
	%	9,57	69,15	12,76	8,52	85,11	14,89
Control group n 1080	n	342	472	184	82	916	164
	%	31,67	43,70	17,04	7,59	84,81	15,19

AB0 system

The results of the study of patients' blood type show the following distribution of blood types in terms of their frequency of occurrence: blood type 0 - 9,57%, blood type A - 69,15%, blood type B - 12,76%, and blood type AB - 8,52%. The figures for the control group are: blood type 0 - 31,67%, type A - 43,70%, type B - 17,04%, and type AB - 7,59%. Data comparison reveals distinctive and significant increase ($p<0,01$) in the figures for type A (by 25,45% to 69,15%), and a small increase in the figures for type AB (by 0,93%). In the other blood types there is a significant ($p<0,01$) decrease in type 0 (by 22,10% to 9,57%), and less significant decrease in type B (by 4,28%) – table1 and figure 1.

Significant differences in the disease distribution have been registered in different regions of the world. In the USA the number of affected people varies in different states from 1 to 4/100000, whereas in Africa and South-East Asia the number is 150/100000 respectively. In the above-mentioned continents this carcinoma is responsible for 50 % of all disease cases [3]. It is the most frequently occurring cancer in Subsaharan Africa and South-East Asia [5]. In Europe and the USA the disease is in the increase too [3]. Whereas in Europe and the USA the onset of the disease is between the fifth and the sixth decade of life, in Asia and Subsaharah Africa - it is between the puberty and the third or fourth decade of life [5, 3].

There is a significant gender difference in the disease distribution. It is more frequent is man than in women [5]. According to [3], the ratio is 76,59% for men 23,41% for women. Dimitrov et al [4] registered 11,3/100000 or 2,5% cases of the disease in men and 5,4/100000 or 0,9% in women. According to [3], the main reasons for the outbreak of the disease are:

1. Liver cirrhosis - in 60-90% of cases;
2. Chronic alcohol abuse;
3. Chronic infection with the viruses of Hepatitis B and C;
4. Contact with exogenous toxic substances - arsenic and pesticides;
5. Prolonged use of contraceptives;
6. Specific carcinogenic substances - aflatoxin, nitrosamine.

Some authors add non-alcoholic steatohepatitis [6], type 2 diabetes [7] and hemophilia [8] to the above list of causes. In some cases the disease can also be caused by tumor metastases in adjacent organs [9].

It is thought that the aflatoxin enters human organism with some foods such as peanuts and corn infected with Aspergilus flavus [6].

Alter [10] points out that the people infected with hepatitis C amount to 25% of all people infected with Ca hepatis.

The microscopic analysis of the disease reveals three different forms:

1. Multi-cellular-nodular - in 65% of the cases with a lot of tumor nodules.
2. A massive single tumor - in 30% of the cases;
3. Diffuse-infiltrative - in 5% of the cases.

This carcinoma gives metastases in the regional lymph nodes, bones, liver veins and the peritoneum [3]. The life span after diagnosing the disease is very limited. In China it is 5,9 months, while in Subsaharan Africa it is only 3 months [9].

In microscopic terms, the disease can be high in tumors, weakly differentiated and anaplastic [3].

The treatment of the carcinoma is operative - through liver resection and transplantation. Chemotherapy and radiotherapy do not have a significant effect.

For all studied types of carcinoma there is a significantly higher frequency in patients with blood type A as compared with the control group [Todorov,

1998-1999] [1]. These are Ca uteri - $p<0,01$, Ca ovarii - $p<0,01$, Ca glandulae mammae - $p<0,01$, Ca glandulae prostatae - $p<0,01$ [11], Ca pancreatis - $p<0,01$ [12], Ca penis и Ca testis - $p<0,001$ [13]. In Ca ventriculi and Ca coloni there is an increase in the number of patients with blood type A, although without significant differences [11]. In some carcinoma types there is an increase in the number of infected people with blood type 0 in comparison with the control group: Ca vulvae - $p<0,05$, [14], Melanoma maligna - $p<0,05$ [15] and Ca renis - $p<0,00$ [16].

In an earlier work of Timčeva et al [17] we have traced the link between Cirosis hepatis and Hepatis hronica (two of the risk factors for Ca hepatis) and the blood type affiliation of patients. It was found that they are more common in men (cirrhosis – 72,22% which is 2,78 times more often) and hepatitis – 61,78%, i.e. 1,68 times more often than in women. There are also significant differences from the control group - $p<0,05$. A slight increase was detected in patients with AB blood type suffering from Hepatis hronica, which is also present in Ca hepatis.

All healthy people are exposed in one way or another to most of the risk factors which trigger Ca hepatis. However, only a small number of them fall victim to this carcinoma. This fact makes us assume that there must be a certain predisposition for the onset of the disease. One such risk factor can be patients' belonging to blood type A and, with a smaller probability - belonging to blood type AB.

Conclusions:

1. There is a significant increase in the number of patients with blood type A ($p<0,01$) suffering from Ca hepatis, in comparison with the control group of healthy people.

2. It is assumed that having blood type A is one of the risk factors for Ca hepatis, which also creates a predisposition for developing the disease as a result of other risk factors.

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The present study is conducted with the financial help of Project № РД-08-125/06.02.2017, fund "Scientific studies" of Konstantin Preslavsky University of Shumen.