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ESOPHAGEAL CARCINOMA AND BLOOD GROUP AFFILIATION

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ABSTRACT: *The article describes a study of 92 patients (79 male and 13 female) with esophageal carcinoma - Ca oesophagii. The patients' blood type affiliation to AB0 and Rhesus factor systems was established. In comparison with the control group, consisting of healthy representatives of modern Bulgarian population, there was a statistically significant increase of disease incidence in patients with blood type A (by 22,60% to 66,30%) - P <0.05. In patients with other blood types there was a varying decrease of incidence (more pronounced in groups 0 and B). Significant sex-based dimorphism was observed in the distribution of the disease in the studied sample (predominantly male patients). We assume that blood type A affiliation is one of the risk factors for the development of this disease. In the Rhesus Factor system there were no differences between the studied sample and the control group.*

KEY WORDS*: blood groups ABO and Rhesus factor, Ca oesophagii*

Introduction: A great deal of our previous research has been concerned with the possible correlation between blood group affiliation and human diseases. We have studied both benign and malignant diseases, while focusing in particular on carcinomas. We believe there may be a link between the onset and progression of diseases and certain biological factors, namely the blood group affiliation of the patients. So far, we have tracked and demonstrated some interrelations between blood type and carcinoma of the female reproductive system, such as (Ca ovarii, Ca uteri, Ca glandulae mamae) [1], (Ca vulvae) [2], the male reproductive system (Ca glandulae prostatae) [1], (Ca penis, Ca testis) [3], the urinary tract (Ca renis) [4], (Ca vesicae urinariae) [5], the respiratory system (Ca pulmonis) [6], and the skin (Melanoma maligna) [7].

Aim of the study: To establish whether there is a link between the blood type affiliation of patients to the AB0 and Rhesus factor systems and the appearance and development of Ca oesophagii.

Material and methods: 92 patients (79 men and 13 women) with esophageal carcinoma (Ca oesophagii) were studied. The patients were diagnosed and treated in the Oncology Ward of the Fifth Hospital in Sofia. Their blood group affiliation to the AB0 and Rhesus factor systems was compared with the control group of healthy persons of Bulgarian population [8] using the $\chi 2$ 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 oesophagii and the control group (%).

Blood types		O	A	B	AB	Rh+	Rh-
Patients with Ca oesophagii n 94	n	19	61	6	6	79	13
	%	20,66	66,30	6,52	6,52	85,87	14,13
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

In the studied patients with Ca oesophagii the following distribution of the frequencies of the individual blood types was established: type 0 - 20,66%, type A - 66,30%, type B - 6,52%, and type AB - 6,52%. In the control group the values were: type 0 - 31,67%, type A - 43,70%, type B - 17,04%, and type AB - 7,59%, respectively. The comparison between groups showed a significant increase in the incidence in patients with type A (by 22,60% to 66,30%) - $p < 0.05$, and a varying decrease of the values in the other blood types (in type B - by 11,54%, in type 0 - by 11,01%, and in type AB - by 1,07%). The observed differences are not significant - $p > 0,1$ (table 1 and figure 1).

Oesophageal carcinoma is the eighth most frequent carcinoma wordwide with a late clinical manifestation, relatively ineffective therapy, poor prognosis, and high mortality [9, 10].

There are two main forms of this carcinoma - squamous cell carcinoma and adenocarcinoma [10]. The first form occurs more often in less developed countries, while the second is more frequent in developed countries [9]. The risk factors for the development of squamous cell carcinoma are smoking and alcohol [9]. Smoking accounts for 50% of cases, and alcohol for about 33%, while the combination of the two - for 75% of cases [11, 12]. Adenocarcinoma risk factor is the prolonged acid reflux [13]. Smoking can also trigger its appearance [11]. It may also be due to other risk factors such as obesity [14]. Erosion processes due to acid reflux occur 20 years later in women than in men, probably due to hormonal factors. The impact of obesity is well manifested (20-30% of patients), but it is not quite clear how it affects the disease [13, 12]. Adenocarcinoma tends to increase in the western world, whereas the squamous cell carcinoma does not show a change in frequency [15].

The highest incidence of adenocarcinoma is observed in Northern and Western Europe (Great Britain, the Netherlands, Ireland and Spain), and New Zealand [16]. For example, in the United Kingdom, the incidence is 18/100000 in the male population and 8.5 / 100000 in female. In this country, 83% of the patients are over 60 years old, and 42% are over 75 years old [10, 14].

Worldwide, the incidence of this disease is 5.2/ 100,000, with pronounced gender differentiation - 7.7 / 100,000 in males and 2.8 / 100,000 in females [16].

The incidence of Ca oesophagii in our country is 2.6/100,000, representing 0,5% of all oncological diseases. There is a marked gender difference in the prevalence of the disease. For the males the values are 4.3/ 100000 – 0,9%, and for the females they are 1.0/ 100000, which is 0,3% [17]. The ratio between the two sexes corresponds to this distribution (85,39% for men and 14,61% for women).

In most of the malignancies covered by us, a significantly higher incidence of blood type A patients compared to the control group [8] has been reported so far. These involve the carcinomas Ca uteri - $p < 0.01$, Ca ovarii - $p < 0.01$, Ca glandulae mammae - $p < 0.01$, Ca glandulae prostatae - $p < 0.01$ [1], Ca pancreatis $p <$ [18], Ca penis - $p < 0.001$, Ca testis - $p < 0.001$ [3]. In Ca ventriculi and Ca coloni, there was a certain increase in group A, but without significant differences [1]. Some carcinomas - Ca vulvae - $p < 0.05$ [2] and Ca renis - $p < 0.001$ showed a significant increase in blood type 0 [4].

Some authors believe that there might be genetic factors which trigger the onset and development of the disease [10].

There are three main stages in the development of the esophageal tumor [10] - T, N, M:

T - primary tumor with seven sub-stages;

N - Metastasis in the lymph nodes with three sub-stages;

M - distant metastases with three sub-stages.

The treatment of this disease involves radiotherapy, combined radiotherapy and chemotherapy, laser therapy, endoscopic prosthesis, and rarely - surgical intervention. Different types of procedures are performed depending on the type and stage of the disease [10].

Our study of the blood type of the patients and the significant increase of disease in patients of type A gives us reason to assume that this blood type is one of the genetic risk factors for the development of the disease.

Conclusions:

1. In the ABO blood type system of the studied patients there was a significant increase in blood type A ($p < 0.05$) patients, compared to the control group.
2. We assume that blood type A is one of the genetic factors for the appearance and development of esophageal carcinoma.

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