

C3 POLYMORPHISM IN LYMPHOSARCOMA AND HODGKINS DISEASE

*D. D. Farhud, M.D., Ph.D., M.G.**

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ABSTRACT

The C3 phenotypes were determined by high-voltage agarose gel electrophoresis in German patients suffering from Lymphosarcoma (n=34), Hodgkin (n=59) and a group of other haematological diseases (n=46). Frequencies of C3 SS, SF and FF phenotypes were not significantly different from the frequencies found in a control group of 322 healthy Germans.

However, high frequency of the FF phenotype in the three patient groups and low F gene frequency in Lymphosarcoma were found.

*Dept. of Human Genetics and Anthropology, School of Public Health, Tehran Univ. of Med. Sc., P.O.Box 14155-6446, Tehran - Iran.

Hodgkin and a group of other haematological diseases.

MATERIALS AND METHODS

C3 types were determined in German patients suffering from Lymphosarcoma (n=34), Hodgkin (n=59) and a group of other haematological diseases (n=46), all provided by the Dept. of Haematology, Univ. Hospital, Mainz, FRG. The control group consisted of 322 healthy Germans.

Determination of the C3 phenotypes was performed by high-voltage agarose gel electrophoresis and the fixed and stained gel was examined for the C3 protein bands.

RESULTS AND DISCUSSION

The distribution of C3 phenotypes and gene frequencies in patients and the control group is shown in Table 1. Lymphosarcoma and Hodgkin seem to be characterized by higher SS and FF but lower SF frequencies, while other haematological diseases with lower SS and higher SF and FF.

However, in the present investigation, perhaps due to small sample size, frequencies of the three C3 phenotypes in the patient groups did not significantly differ from those found in the healthy controls.

High frequency of the FF phenotype in the three patient groups is in agreement with the results of the previous study(10) in Iranian patients with esophageal cancer(9.75% compared with 4.65% in the control group),

while low SS phenotype frequency in other haematological diseases (47.82% compared with 63.97% in the control group) with significantly low SS frequency found in hepatitis patients (10).

Regarding the C_3^F gene frequency, Lymphosarcoma seems to be characterized by low frequency of the gene (14.70%) which is in agreement with that found (6) in thyroid cancer (14.90%), while high C_3^F gene frequency in other haematological diseases (29.34%) with that reported (10) in esophageal cancer (30.48). Unfortunately, no other report is available concerning the C_3 polymorphism in various cancer diseases. It seems that the association between C_3 phenotypes and different cancers varies in relation to the different origin of the disease and the involvement of specific and non-specific immune system, specially the third component of complement.

In order to establish strong associations (biological significance) of C_3 system with various carcinomas, more extensive studies on large samples are needed.

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Table.1: C3 phenotypes in Lymphosarcoma, Hodgkin and other haemat. diseases.

Diseases	N	SS		SF		FF		C3 ^F	X ²
		n	%	n	%	n	%		
Lymphosarcoma	34	26	76.47	6	17.64	2	5.88	14.70	3.72
Hodgkin	59	41	69.49	14	23.72	4	6.78	18.64	3.40
Other Haemat. Diseases	46	22	47.82	21	45.65	3	6.52	29.34	4.91
Control	322	206	63.97	106	32.92	10	3.10	19.56	

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INTRODUCTION

Genetically determined polymorphism of the third component of human complement (C3) was first demonstrated simultaneously by two research groups (2,5). Two codominant alleles C_3^S and C_3^F at an autosomal locus on chromosome 19 determine three common phenotypes SS, SF and FF. Several rare variants due to mutated alleles at the C3 locus have been described by different investigators (3, 11, 16).

The variation in frequency of C3 phenotypes has been extensively studied in several populations (4, 11, 13), but the biological significance of the C3 polymorphism is still not very clear. In an attempt to understand the maintenance of the polymorphism, a number of studies have examined the association between diseases and phenotypic variants of C3. A high incidence of the C_3^F phenotype has been found in patients with rheumatoid arthritis (9, 10), atherosclerosis (8), hepatitis (9), cystic fibrosis (17), leprosy (1), and Hyperlipoproteinemia (9). In several other diseases, such as Graves disease, diabetes mellitus and glomerulonephritis the phenotype frequency did not differ significantly between patients and controls (19, 14, 15). It appears from these studies of the association between C3 and disease that C3 alleles may be relevant factors in the susceptibility to certain diseases. In the present study investigations have been made of the distribution of C3 phenotypes in Lymphosarcoma,

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