

STUDY OF SEX RATIOS , ABO AND Rh BLOOD GROUPS DISTRIBUTION IN SOME HAEMATOLOGICAL AND LYMPHATIC DISEASES IN IRAN

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Abstract

Associations of some haematological and lymphatic diseases with sex and ABO and Rh blood groups were studied in 2579 patients , compared with a control group of 126332 individuals , by the use of clinical as well as laboratory findings , in Tehran.

Highly significant increase of male/female ratio is shown in acute myelogenous leukemia , acute lymphocytic leukemia , chronic lymphocytic leukemia , aplastic anaemia and paroxysmal nocturnal haematuria. Idiopathic thrombocytopenic purpura shows a decrease of this ration.

In chronic myelocytic leukemia and acute lymphocytic leukemia , group O has the highest incidence , followed by groups A and B , and group AB has the lowest incidence.

Between various diseases , the highest frequency of blood group A was observed in Hodgkin's disease , and the lowset in NHL. Group B had highest frequency within PNH patients and the lowset in NHL. Group O had the highest frequency in NHL followed by ITP and MF , and the lowest in SA.

In AML patients there is a significant decrease of Rh negative patient (7.15%). The highest incidence of Rh negative was among the SA patients (18.18%) and the lowest in MM (3.70%).

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Introduction

The relationship between ABO and Rh blood groups and susceptibility to various diseases has been studied for at least the past forty years (4). The first study on association between ABO blood groups and diseases was carried out on patients affected with cancer of stomach (1). Extensive review of numerous investigations concerning the blood groups and diseases was made in 1978 (4).

There have been association studies with relatively poor clarification in the neoplasms of the haematopoietic and lymphatic tissues , and results have not, in most cases , been consistent. However , significant associations of ABO

blood groups with some of these diseases have been reported in various countries. Significant association between Rh blood groups have been reported with very few diseases (4).

Data about such studies in Iran so far is not available and the purpose of this investigation was to study the distribution of sex , ABO and Rh blood groups in numerous haematological and lymphatic diseases in the Iranian population.

Materials and method

The present study was conducted on patients suffering from various haematological and lymphatic diseases , with different etiologies , registered in the department of haematology , Tehran University of Medical Sciences. This center admits patients from the whole country. Final diagnoses were confirmed by clinical and laboratory findings in the same center. The information on a total of 2579 individuals , 1548 males and 1031 females , was taken from the data available in the records of the above mentioned department. ABO and Rh blood groups and sex ratios were estimated on the whole data (2579). The data of ABO and Rh blood groups distribution , on 126332 individuals , in a previous study in Iran were used as the control groups (3). Statistical analyses were performed by the use of chi-square method.

Results and discussions

Table 1 shows full identification , abbreviation , total numbers of patients, percentage of each disease in our collection , male and female

numbers and sex ratios (M/F) and the statistical analyses of sex ratios in haematological diseases. AML , ALL , CLL , AA and PNH show increase of M/F ratios to a highly significant level ; ITP shows a decrease of this ratio.

Table 2 shows the distribution of ABO blood groups among the same collection as identified in table 1. According to statistical analysis , in CML and ALL the highest incidences are in group O followed by groups A , B , and group AB has the lowest incidence , in a highly significant level.

The highest frequency of group A , among various diseases , was observed in HD (37.08%) and the lowest in NHL (25.58%). For group B , the frequency highest was among the PNH (33.33%) and the lowest for NHL (13.95%). Group O had the highest frequency in NHL (51.17%) , followed by ITP (48.44%) and MF (45.95%) , the lowest was in SA (31.82%).

Table 3 shows a significant decrease of Rh negative individuals among AML patients. The highest of Rh negative , between all the diseases , was among the SA patients (18.18%) , followed by HA (12.50%) , PNH (11.76%) and MF (10.81%). The lowest incidence was among the MM patients (3.70%).

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Table 1 - Sex distribution in haematological and lymphatic diseases

Diseases	N	%	M	F	M/F	X ²	P
Acute Myelogenous Leukemia AML	461	12.87	275	186	3/2	3.58	0.05
Chronic Myelocytic Leukemia CML	207	8.02	117	90	1/1	0.87	0.35
Acute Lymphocytic Leukemia ALL	208	8.03	140	68	2/1	10.14	0.001
Chronic Lymphocytic Leukemia CLL	108	4.18	80	28	3/1	14.9	0.00
Aplastic Anaemia AA	316	12.25	220	96	2/1	16.78	0.00
Iron Deficiency Anaemia IDA	275	10.66	130	145	1/1	0.67	0.41
Hemolytic Anaemia HA	48	1.86	20	28	1/1	1.13	0.28
Sideroblastic Anaemia SA	22	0.85	13	9	1/1	0.21	0.64
Thalassemia Thal	197	7.64	104	93	1/1	0.03	0.86
Hodgkin's Diseases HD	151	5.85	92	59	2/1	2.79	0.094
Idiopathic Thrombocytopenic Purpura ITP	64	2.48	19	45	1/2	8.45	0.003
Non Hodgkin's Lymphoma NHL	43	1.66	25	18	1/1	0.40	0.52
Myelofibrosis MF	37	1.43	22	15	1/1	0.52	0.47
Multiple Myeloma MM	54	2.09	36	18	2/1	3.40	0.065
Paroxysmal Nocturnal Haemoglobinuria PNH	51	1.97	43	8	5/1	16.79	0.00
Others	337	18.16	212	125	2/1	6.55	0.011
Total	2579	100	1548	1031	3/2		

Table 2- ABO blood group distribution in haematological and lymphatic diseases

Diseases	N	A		B		O		AB		χ²	P
		n	%	n	%	n	%	n	%		
AML	461	147	31.892	107	23.222	171	37.110	36	7.740	0.22	0.95
CML	207	70	33.770	45	21.633	77	37.100	5	2.400	0.22	0.90
CLL	108	68	62.963	19	17.600	19	17.435	16	14.815	37.50	0.00
ALL	208	93	44.710	68	32.700	117	56.250	5	2.375	5.11	0.02
AA	316	104	32.912	9	2.848	177	56.013	5	1.579	1.59	0.21
IDA	275	99	35.820	68	24.730	117	42.545	26	9.455	4.63	0.03
HA	48	17	35.420	9	18.750	17	35.420	2	4.167	8.22	0.01
SA	22	6	27.270	6	27.270	7	31.820	3	13.640	7.28	0.04
HDL	22	6	27.270	5	22.730	7	31.820	2	9.090	4.09	0.04
ITP	157	55	34.990	30	19.080	59	37.580	6	3.810	2.39	0.12
NHL	157	19	12.100	1	0.630	21	13.380	4	2.540	1.57	0.21
MF	64	19	29.690	7	10.940	17	26.560	3	4.690	7.30	0.16
MM	43	11	25.580	8	18.600	17	39.530	4	9.300	5.14	0.03
PMN	37	11	29.730	8	21.620	17	45.950	1	2.700	7.28	0.07
LYN	54	16	29.630	14	25.930	21	38.890	3	5.560	5.88	0.02
Control	126,332	40,986	32.444	29,665	23.488	45,348	35.900	10,333	8.18		0.40

Table 3 - Rh (D) blood group distribution in haematological and lymphatic diseases

Disease	N	D+		D-		χ²	P
		n	%	n	%		
AML	461	428	92.85	33	7.15	4.91	0.02
CML	207	187	90.34	20	9.66	0.06	0.80
CLL	108	99	91.37	9	8.55	0.47	0.49
ALL	208	187	90.13	21	10.13	0.32	0.57
AA	316	287	90.83	29	9.17	0.31	0.58
IDA	275	252	91.64	23	8.36	1.94	0.16
HA	48	42	87.50	6	12.50	0.06	0.81
SA	22	18	81.82	4	18.18	0.71	0.39
HDL	197	186	94.42	11	5.58	0.15	0.70
ITP	151	136	90.07	15	9.93	0.09	0.74
NHL	64	59	92.19	5	7.81	0.00	0.99
MF	43	39	90.70	4	9.30	0.05	0.83
MM	34	32	89.19	2	5.88	0.04	0.84
PMN	51	45	88.24	6	11.76	1.94	0.16
Control	126,332	113,164	89.58	13,168	10.42		0.93

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