

THE DISTRIBUTION OF CLASS I HLA ANTIGENS IN 1000 NORMAL INDIVIDUALS IN KHORASAN PROVINCE

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ABSTRACT

In this paper, the antigen and gene frequencies of class I HLA antigens were evaluated in 1000 individuals in Khorasan province in northeast Iran, and compared with statistics of other countries. The results and a general discussion are presented.

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INTRODUCTION

The Iranian population of over 50 million is composed of many ethnic groups who are not uniformly distributed in a large geographical area. There are however some different ethnic groups; for example, Turks, Turkmans, Arabs, and Jews. The majority of the Iranian population are caucasian.¹

In Khorasan province in northeastern Iran, the majority of the population are Muslim and of heterogeneous origin. Many of Khorasan's tribes are from local origin, others however, migrated to Khorasan or were brought from bordering areas by Nadershah. At the beginning, these tribes were ethnically distinct. Because of conquest and intermarriage, their progeny in the Muslim population are lost today.

In this study, the antigen and gene frequency of the HLA class I system was investigated in 1000 normal individuals in Khorasan.

MATERIALS AND METHODS

1000 healthy Khorasanians were randomly chosen and typed for HLA-ABC. The mean age was 25 years and there were 700 males and 300 females.

Methods

- 20 ml of the patient's blood is heparinized.
- The mononuclear cells are purified by Ficoll-Hypaque gradient centrifugation.

The cells are then added to the wells of a microtiter tray containing antisera to HLA antigens.

- If anti-HLA is present, it will bind to the HLA antigens on the cell surface, fix complement, and cause the cell to lyse. Eosin then enters the cell, and the cell appears red under phase microscopy. In contrast, if anti-HLA can not bind to the cell, complement is not fixed, no lysis ensues, and the living cell appears unstained under phase microscopy.

RESULTS

Table I and II show the distribution of HLA-ABC antigens and gene frequencies for the patients.

TABLE I. HLA-A LOCUS DISTRIBUTION ETHNIC GROUP; KHORASANIAN SELECTED PANEL I, NUMBER: 1000

ANTIGEN	POSITIVE PANEL	ANTIGEN FREQUENCY	GENE FREQUENCY
A1	218	0.218	0.1
A2	330	0.330	0.2
A3	300	0.300	0.2
A9	310	0.310	0.2
A10	210	0.210	0.1
A11	305	0.305	0.2
A19	35	0.035	0.02
A25	0	0.00	0.00
A26	32	0.032	0.02
A28	0	0.000	0.00
A29	100	0.100	0.05

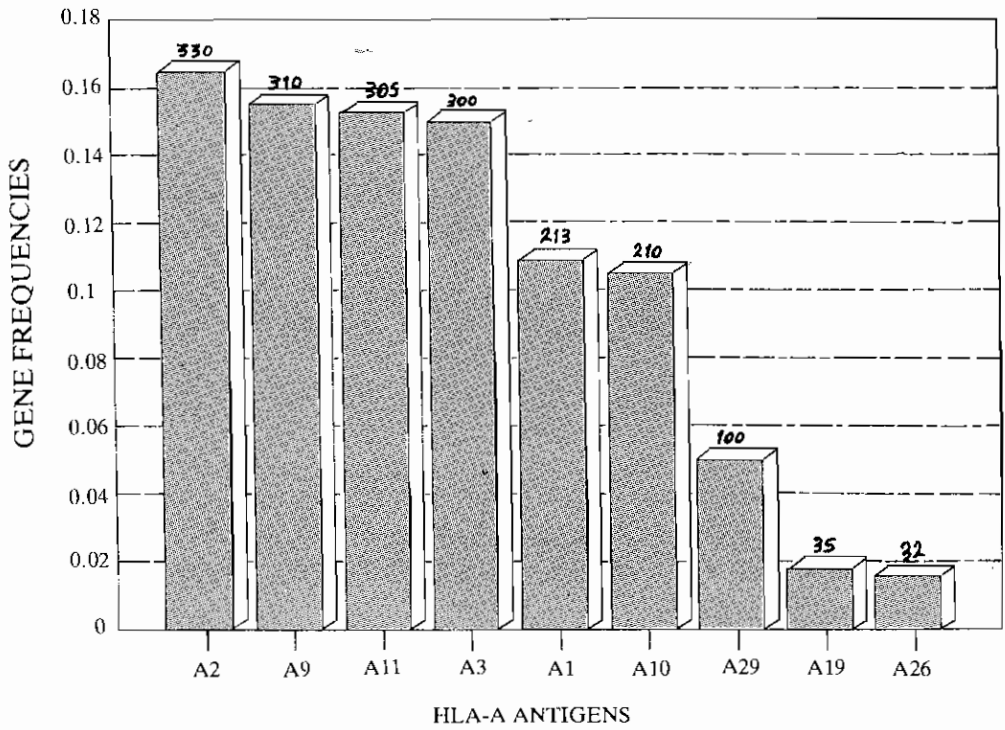


Fig. 1. HLA-A gene frequencies in 1000 Khorasanian normal population.

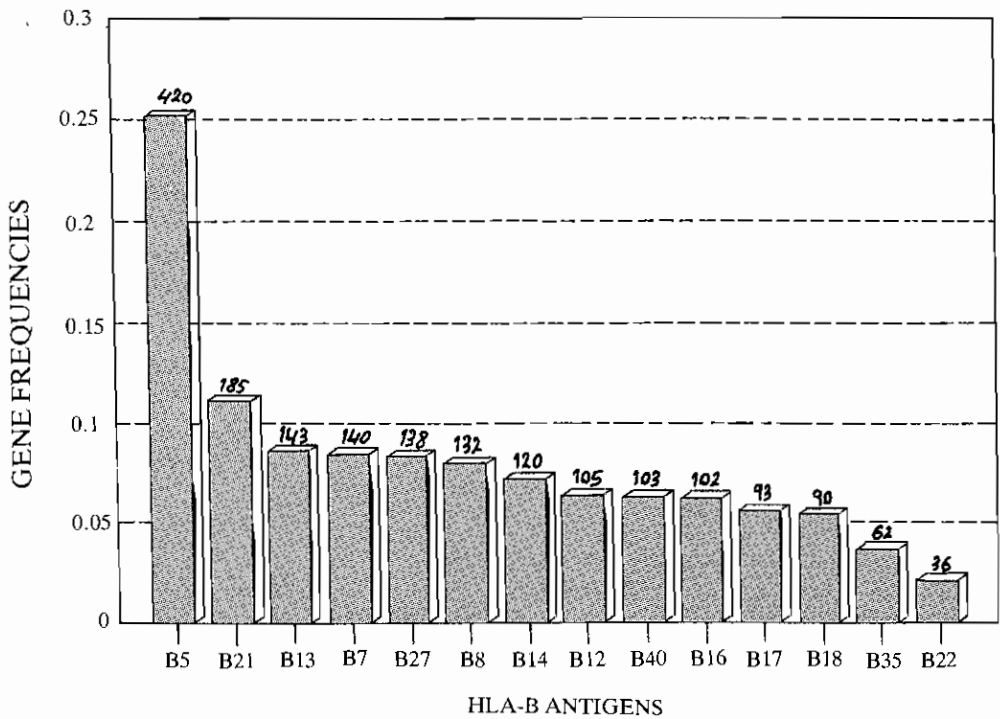


Fig. 2. HLA-B gene frequencies in 1000 Khorasanian normal population.

HLA Antigens

HLA-B AND CWI, 4 LOCUS DISTRIBUTION

	POSITIVE PANEL	ANTIGEN FREQUENCY	GENE FREQUENCY
B5	420	0.140	0.07
B7	140	0.132	0.07
B8	132	0.105	0.05
B12	105	0.143	0.07
B13	143	0.120	0.06
B14	120	0.103	0.05
B16	103	0.093	0.05
B17	93	0.090	0.05
B18	90	0.185	0.10
B21	185	0.036	0.02
B22	36	0.138	0.07
B27	138	0.062	0.04
B35	62	0.00	0.00
B37	0	0.102	0.05
B40	102		
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CW1	147	0.147	0.08
CW4	153	0.153	0.08

Distribution of gene frequencies are illustrated in Figs. 1 and 2.

The gene frequency can be calculated from the following formula:

$$S = \frac{\text{Number of positive panels}}{\text{Total number of panels}}$$

DISCUSSION

Many studies have been conducted on the distribution of the HLA antigens because of the polymorphism

of the HLA gene.

We found an increased frequency of HLA-A₂, A₉ and HLA-B₅, B₂₁ in the Khorasanian population. The findings are more or less similar to reports from other countries and the British Isles.⁴

The frequencies of A₁ and B₅ in Khorasan are the same as Nikbin found in his study,^{1,3} but in Khorasan the frequencies of B₇, B₂₇, and B₁₃ are higher (Figs. 1, 2).

The interesting point is the presence of a few antigens in our population which are not presented or are rarely found in other populations except in Jews and Parsis.⁵ These two populations originated from Persia and present a high frequency of B₁₄.

These data show the importance of genetic marker studies among different populations for better understanding of genetic distribution and its repercussions in medical and epidemiological studies.

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