HLA AND CHINESE HB_sAg CARRIERS

S. H. Chan
G. B. Wee
N. Srinivasan
Y. W. Ong

Department of Microbiology
Faculty of Medicine
University of Singapore, Singapore

S. H. Chan, M.B. (Monash), Ph. D. (Melbourne)
Senior Lecturer

G. B. Wee
Senior Technologist

WHO Immunology Research and Training Centre
Faculty of Medicine,
University of Singapore, Singapore

N. Srinivasan
Technologist

Singapore Blood Transfusion Service
Singapore General Hospital
Outram Road, Singapore

Y. W. Ong, MBBS, FRCPE, AM
Senior Consultant Haematologist

SYNOPSIS

HLA typing were performed on 76 unrelated Chinese HB_sAg carriers. The comparison group consisted of 238 normal unrelated Chinese individuals. The frequency of HLA-B40 was found to be higher among carriers than controls.

INTRODUCTION

HB_sAg carrier rates varies greatly in different parts of the world (0.1 — 15%). Although environmental factors like tropical climate and poor socio-economic conditions obviously play great roles in determination of these rates, there are suggestions that non-environmental factors may also be important (Cossart 1977). Japan and Czechoslovakia are temperate countries with good socio-economic conditions and yet have high carrier rates and so does Greenland which is situated in the Artic and is sparsely settled. The findings of family clustering in both high and low incidence countries and differential rates in Chinese, Malay and Indian ethnic groups in Singapore (Yap, et al 1972) suggest that genetic factors may be important. The HLA system is the most polymorphic blood genetic system so far known in man and reported here are the HLA profiles in HB_sAg carriers in one ethnic group in Singapore, the Chinese.

MATERIALS AND METHODS

HB_sAg carriers

A total of 76 unrelated Chinese HB_sAg carriers, detected at routine screening for blood donation, was studied. They were predominantly males with an age range of 18 — 34 years. The control normal population consisted of 238 unrelated normal Chinese subjects (Chan, et al 1978).

HLA Typing

HLA typing was performed using the NIH Microcytoxicity method. A total of 26 locus A and B antigens were typed for, using 196 typing sera.

RESULTS

Table 1 shows the HLA antigen frequencies of the 76 HB_sAg carriers and the 238 controls. The frequency of HLA A9, B40, BW21, was increased and All and BW15 was decreased in the carriers when compared to controls. HLA-B40 was observed in 44/76 (57.9%) HB_sAg carriers compared to 98/238 (41.2%) controls. (X^2 = 6.5, p $<$.01 RR = 2.0). However these differences were no longer significant when corrected for the number of antigens typed for.

TABLE 1

HLA ANTIGEN FREQUENCIES IN CHINESE HB_sAg CARRIERS AND NORMAL CONTROLS

	HB_sAg Carriers (n = 76)	Normals (n = 238)
A1	0	0
A2	56.6	52.9
A3	0	0.4
A9	36.8	27.3
A10	5.3	5.0
A11	51.3	60.5
A28	0	0.4
A29	0	1.3
AW19	18.4	20.6
B5	10.5	12.6
B7	0	1.7
B8	0	0.4
B12	1.3	3.4
B13	22.4	20.2
B14	0	0
B15	14.5	22.3
B17	11.8	14.3
B18	1.3	1.7
B27	6.6	7.1
B37	0	0.4
B40	57.9	41.2
BW16	15.8	10.9
BW21	3.9	0
BW22	9.2	12.2
BW35	3.9	5.0
BW46	26.3	22.7

DISCUSSION

We have shown that there are some HLA associations in Chinese HB_sAg carriers, the frequency of HLA-B40 being higher among the carriers than controls. However, this differences were no longer significant when corrected for the number of antigens typed for. The finding of a decreased frequency of B15 has also been noted in other ethnic groups (Bertrams, et al 1974; Boettcher, 1975)

To succumb to an infection is dependent on the organisms eg. dose, virulence and route of infection on one hand and the susceptibility of the host on the other. Genetic factors are part of the host susceptibility factors. In a high incidence country like Singapore, it is presumed that virulent Hepatitis B virus are around in abundance. We may then expect because of the high exposure that some not so genetically susceptible subjects may also succumb to the infection. This may explain why the HLA association was not stronger. There may also be heterogenicity among the HB_sAg carriers. Some may be genuine carriers unable to get rid of the hepatitis B virus while others may have contacted hepatitis virus relatively recently and were in the process of virus elimination.

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