

THE DISTRIBUTION OF HLA-B*27 ALLELES IS THE SAME IN HLA-B27 POSITIVE PATIENTS AND HEALTHY BLOOD DONORS



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Introduction

Patient HLA-B27 typing is widely performed as an aid to the diagnosis of several diseases, particularly ankylosing spondylitis.

Our flow cytometry method differentiates between the products of HLA-B*2702, B*2705 and B*2708 (1). This has allowed us to study their distribution in patients being investigated for HLA-B27-associated diseases.

Methods

We evaluated 2,084 routine HLA-B27 typing requests, performed between April, 1997 and December, 1999. All B27/B2708 positive samples not showing a typical "B2705" pattern by flow cytometry were HLA-A and B typed by PCR using sequence-specific primers (2). This allowed their HLA-B*27 status to be confirmed and their B*27 allele to be accurately assigned. All statistical comparisons were performed using Fisher's exact test.

Results

The patient HLA-B27 frequency was 25.10%, compared to 8.12% in 1,798 local blood donors (2), $p < 0.0001$, in agreement with our previous findings (24.5%) in 5,193 patient requests (3).

In addition, the frequency of HLA-B7 (26.15%) in the patients, determined as part of our flow cytometry B27/B2708 typing procedure, did not differ significantly from that of our 1,798 blood donor controls (26.97%), $p > 0.25$ – Table 1.

Table 1. Frequency (%) of HLA-B27 and B7 in patients being investigated for B27-associated disease and blood donors

HLA-	Patients (n=2,084)	Blood donor controls (n=1,798)	p-value
B27	25.10	8.12	< 0.0001
B7	26.15	26.97	> 0.5

Of the 523 B27 positives, 1 (0.19%) was B*2701. This finding, albeit with only one sample, indicates that our flow cytometry method also differentiates between the B*2705 and B*2701 products (Table 2).

A total of 14 (2.68%) patients were B*2702 and 508 (97.13%) were "B2705". No HLA-B2708 subjects were identified.

This distribution of B27 subtypes did not differ significantly from that found in 154 B27 positive blood donors for B*2701 (0.0%), B*2702 (3.25%), B*2705 (95.45%) (4), or in 148 B27 positive blood donors for B*2708 (0.68%) (2), all $p > 0.2$ (Table 3).

Table 2. Reactivity of single HLA-B*2701 patient compared with criteria for "B2705"

Monoclonal antibody:			
ABC-m3 B27/wkB7-FITC (Immunotech/Coulter)	BB7.1 B7-PE	FD705 B27-FITC (One Lambda)	HLA- B7/27/2708 status
2.36 ^a	0.36	3.12	B*2701
>4	<1	>4	"B2705"
<1	<1	<1	negative ^b

^a Median channel fluorescence

^b Also, B22, B37, B42, B44, B73 and B703 negative (1)

Table 3. Distribution of HLA-B27 "alleles" in patients and blood donor controls possessing B27

HLA-B27 "alleles"	Percentage in HLA-B27 positive patients	Percentage in HLA-B27 positive blood donors	p-value
B*2701	0.19	0.00	0.77
B*2702	2.68	3.25	0.44
"B2705"	97.13	95.45	0.21
B*2708	0.00	0.68	0.22

Comment

It is noteworthy that all patient and control groups referred to in this study were Welsh residents.

These results further validate our flow cytometric HLA-B27/B2708 typing procedure.

The findings with a single patient example of B*2701 suggest that our flow cytometry method can differentiate between the products of B*2701 and B*2705. This has subsequently been supported by the identification of a further example of B*2701.

This study reveals that the distribution of the common Northern European Caucasoid B*27 alleles is the same in B27 positive patients, being investigated for HLA-B27-associated diseases, as it is in the healthy blood donor population.

References

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