IMMUNIZATION OF THALASSAEMIC PATIENTS AGAINST THE Ag SYSTEM

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INTRODUCTION

Patients with homozygous b-thalassaemia may develop a variety of allo-antibodies against blood cell antigens and serum protein antigens as a result of multiple transfusions. Previous studies in our thalassaemia unit and elsewhere have shown that the incidence of red cells alloantibodies is lower than expected, whereas the frequency of allo-antibodies against low density lipoproteins in high (1-3).
The aim of this study is to investigate the frequency and specificities of allo-antibodies against IgA and low density lipoprotein and to compare these results with the corresponding data ten years ago.

MATERIALS AND METHODS

Sera from 145 multiply transfused Greek thalassaemic patients were tested for the presence of allo-antibodies against IgA (anti-IgA) and low density lipoprotein (anti-Ag) using a haemagglustination assay (HA) and immunodiffusion tests. The patients had all been receiving red cell concentrates (RCC) which, after 1985, were leukocyte poor with washing and filtration procedures (Table 1). The prevalence of the detected allo-antibodies are analyzed in relation to age, splenectomy, number of blood transfusions and allergic reactions associated with tranfusion.
Data were analyzed by logistic regression.

RESULTS

Table 1

	Sample description	
	n	%
Total patients	145	100.0
Females	76	52.4
Males	69	47.6
	Diagnosis	
Thalassaemia major	127	87.6
Intermedia thalassaemia	9	6.2
Sickle/Thalassaemia	9	6.2
	Splenectomy	
Yes	85	58.6
No	60	41.4
Age (years) Median	Min	Max
23	3	50
Transfusions 353	2	980

Table 2: Frequency of Ag-antibodies (by sex, diagnosis and splenectomy)

	Anti-Ag +		Anti-Ag -		
	n	%	n	%	
Total	35	24.1	110	75.9	
Sex					
Females	18	23.7	58	76.3	$x^2_1=0.00$
Males	17	24.6	52	75.4	p=1.00
Diagnosis					
Major thal.	34	26.8	93	73.2	$x^2_1=3.88$
Intermedia thal.	1	11.1	8	88.9	p=0.049
Sickle/b-thal.	0	.0	9	100.0	
Splenectomy					
Yes	17	20.0	68	80.0	$x^2_1=1.41$
No	18	30.0	42	70.0	p=0.23

Table 3: Frequency of Ag-antibodies by age and number of transfusions

	Ag (+)		Ag (-)	
	n	%	n	%
Total	35	24.1	110	75.9
Age				
<15	3	37.5	5	62.5
15-19	7	24.1	22	75.9
20-24	11	23.4	36	76.6
25-29	10	33.3	20	66.7
30-34	2	11.1	16	88.9
35+	2	15.4	11	84.6

Table 4: Specificities of Ag-antibodies in total sample and in the positives

	Total sample		Ag positives	
	n	%	n	%
Total	145	100.0	35	100.0
a1	11	7.6	11	31.4
c	7	4.8	7	20.0
d	2	1.4	2	5.7
g	2	1.4	2	5.7
h	7	4.8	7	20.0
x	26	17.9	26	74.3
y	3	2.1	3	8.6

Table 5: Comparative studies

1978-1981
84.6% of the patients remained positive
15.4% lost their antibody (z specificity)

1978-1991
69.2% remained positive
30.8% lost their antibody

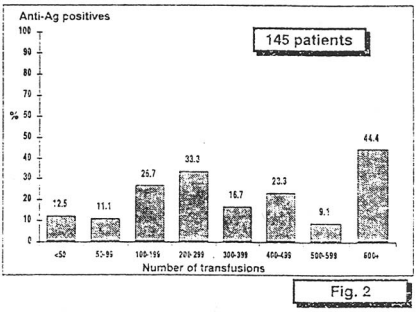

Fig. 2

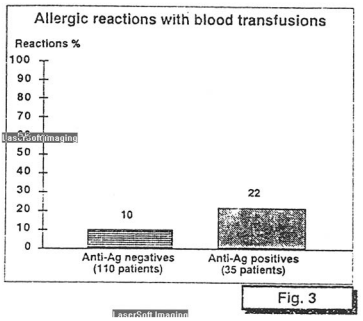

Fig. 3

DISCUSSION

The results of this study show that 24% of the patients are positive for Ag allo-antibodies in comparison to 27% of 178 patients tested in 1978/1981. Ag(x) and Ag(al) (7.6%) are the most common specificities found. Except for one case, Ag antibodies were not detected in the intermedia and sickle/thalassaemia patients who had received very low numbers of blood transfusions. Sex, age and splenectomy did not affect significantly the frequency of the Ag antibodies, whereas there was a correlation with the number of transfusions per year.

History of severe allergic reactions associated with blood transfusions was statistically significantly higher in the anti-Ag positive patients in comparison with the negative ones.

The results of this study confirm previous findings of the high frequency of allo-immunization against low density lipoproteins in multiply-transfused patients. However, there is a declining incidence of these antibodies over a period of 10 years either because of desensitization of the patients as a result of repeated contact with more common antigens(5) or because of improvements in the quality of transfused blood(6).

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