Autoantibodies in a cohort of sera that contain anti-Jo-1 (histidyl-tRNA synthetase) antibodies

Marvin J. Fritzler[1], Michael Mahler[2], Mark L. Fritzler[1]

[1]Advanced Diagnostics Laboratory, Faculty of Medicine, University of Calgary, Calgary, AB, Canada, [2]Dr. Fooke Laboratorien GmbH, Neuss, Germany.

INTRODUCTION

Autoantibodies directed against the cytoplasmic autoantigen Jo-1 (histidyl-tRNA synthetase) are a serological hallmark of patients that have myositis. In this study, we evaluated 35 sera that had antibodies to Jo-1 for the presence of antibodies to other autoantigens. A retrospective analysis of the clinical features of these patients was included in the study.

METHODS

Sera with anti-Jo-1 antibodies were identified through routine clinical laboratory analysis using an **A**ddressable **L**aser **B**ead **I**mmuno**A**ssay (ALBIA: QUANTA Plex 8, INOVA San Diego, CA). The QUANTA Plex assay also simultaneously detects antibodies to seven other autoantigens (see Table 1). Sera were also evaluated for the presence of the 60 kDa SS-A/Ro and 52 kDa Ro antigens by ELISA (INOVA). Autoantibodies to other autoantigens associated with myositis were detected by western blotting (EUROLINE-WB Myositis, Euroimmun, Lübeck, Germany). Clinical features were assessed by retrospective chart review.

RESULTS

The frequency of other autoantibodies in this cohort of anti-Jo-1 positive sera is summarized in Table 1. None of the sera reacted with Scl-70, Rib-P, Mi-2, PL-7 or PL-12. There was a high correlation (86%) of the Euroline western blotting assay with the Jo-1 ALBIA. Retrospective chart review indicated that 30/35 (86%) had a diagnosis of polymyositis/dermatomyositis, two had undifferentiated connective tissue disease, one had systemic sclerosis and PM/Scl antibodies, and two with anti-Sm antibodies had systemic lupus erythematosus.

FREQUENCY OF Jo-1 ANTIBODIES ADVANCED DIAGNOSTICS LABORTORY

Audit Period 2004
85/4916 (4.5%)

Table 1 Autoantibody profile of 35 anti-Jo-1 positive samples.

		ELISA		ALBIA								Myositis Blot	
Patient #	Diagnosis	SS-A / 52	SS-A 60	Jo-1	Chromatin	RNP	Sm	SS-B	SS-A	Scl-70	Rib P	Jo-1	Other
1	PM	mod +	–	mod +	–	–	–	low +	–	–	–	+++	
2	PM	hi +	–	mod +	–	–	–	–	low +	–	–	+++	
3	PM	mod +	hi +	low +	–	–	–	–	hi +	–	–	+++	
4	PM	hi +	–	mod +	–	–	–	–	low +	–	–	++++	
5	PM	low +	–	hi +	–	–	–	–	–	–	–	+	
6	PM	hi +	–	mod +	–	–	–	–	hi +	–	–	++	
7	PM	hi +	–	mod +	–	–	–	–	low +	–	–	+++	
8	PM	hi +	–	mod +	–	–	–	low +	hi +	–	–	++++	
9	PM	mod +	low +	low +	–	–	–	–	–	–	–	+/-	
10	PM	low +	–	mod +	–	–	–	–	–	–	–	–	
11	PM	mod +	–	mod +	–	–	–	–	–	–	–	+	
12	PM	hi +	–	mod +	–	–	–	–	–	–	–	–	
13	PM	hi +	–	mod +	–	–	–	–	low +	–	–	+	
14	PM	hi +	hi +	hi +	–	–	–	low +	hi +	–	–	–	
15	PM	hi +	–	mod +	–	–	–	–	–	–	–	++	
16	PM	–	–	hi +	–	–	–	–	–	–	–	++++	
17	PM	hi +	low +	hi +	–	–	–	hi +	mod +	–	–	+++	Ku86
18	PM	hi +	–	mod +	–	–		–	mod +	–	–	–	
19	PM	hi +	–	mod +	–	–	–	–	hi +	–	–	++++	
20	SLE	hi +	–	low +	–	–	low +	–	hi +	–	–	+	
21	PM	mod +	–	hi +	–	–	–	–	–	–	–	++++	
22	PM	mod +	–	mod +	–	–	–	–	–	–	–	++	
23	PM	–	low +	hi +	–	–	–	hi +	hi +	–	–	+++	
24	PM	–	mod +	hi +	–	–	–	hi +	hi +	–	–	+++	
25	PM	hi +	–	mod +	low +	–	–	–	hi +	–	–	++	
26	PM	hi +	–	mod +	low +	–	–	–	hi +	–	–	++	
27	PM	–	–	mod +	–	–	–	–	–	–	–	++	
28	PM	–	–	mod +	–	–	–	–	–	–	–	++++	
29	PM	–	–	low +	hi +	–	–	–	–	–	–	+	
30	SLE	–	–	low +	hi +	hi +	hi +	–	–	–	–	+	
31	PM	hi +	–	low +	–	–	–	–	–	–	–	++++	
32	UCTD	hi +	mod +	low+	–	–	–	–	low +	–	–	+	
33	UCTD	–	–	low+	–	–	–	–	–	–	–	–	
34	DM	–	–	low+	–	–	–	–	–	–	–	+++	Ku 72
35	SSc	–	–	low+	–	–	–	–	–	–	–	+	PM/Scl
No. pos		25	7	35	4	1	2	6	17	0	0	30	1
% pos		71	20	100	11	3	6	17	49	0	0	86	3

RETROSPECTIVE CHART REVIEW

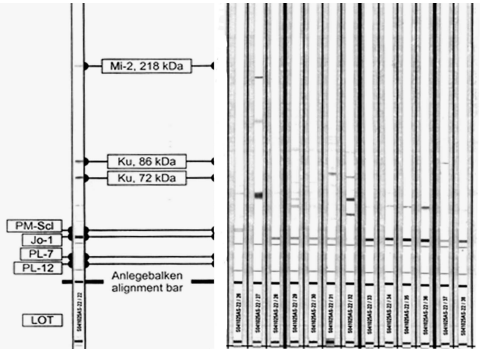
30/35 (86%) polymyositis/dermatomyositis

2/35 (6%) undifferentiated connective tissue disease

2/35 (6%) SLE + anti-Sm antibodies + no history of myositis

1/35 (2%) systemic sclerosis + PM/Scl antibodies + no history of myositis

Figure 1 Representative Immunoblot. Result of 13 anti-Jo-1 positive sera in the Euroline-WB Myostis (b.) analysed by the alignment bar (a.)



CONCLUSIONS

Sera with anti-Jo-1 antibodies often have co-existing autoantibodies to other autoantigens. Most notably and as reported, there is a high frequency of antibodies to Ro-52. There is a lower frequency of autoantibodies to other antigens including those that are specific for SLE (Sm) and others related to inflammatory myopathy. The specificity of the Jo-1 antibody for polymyositis in this study was 86% and the agreement of two different assays used to detect antibodies to Jo-1 was 86%. All patients with other symptoms than PM had low titer Jo-1.

REFERENCES

Nishikai M and Reichlin M. Heterogeneity of precipitating antibodies in polymyositis and dermatomyositis: characterization of the Jo-1 antibody system. *Arthritis Rheum* 23: 881-888, 1980.

Venables PJ. Antibodies to Jo-1 and Ro-52: why do they go together? *Clin Exp Immunol* 109: 403-405, 1997.