



## Anti-Glycyl-tRNA synthetase autoantibodies (EJ)

### Synonyms

anti-EJ

### Indications

- ▶ Dermatomyositis
- ▶ Polymyositis
- ▶ PM/DM-overlap syndromes with other connective tissue diseases
- ▶ Antisynthetase syndrome
- ▶ Interstitial lung disease
- ▶ Raynaud's phenomenon (active stage, before starting therapy)

### see also

- ▶ [Autoantibodies in idiopathic inflammatory myopathies](#)

### Antigens

The glycyl-tRNA synthetase (EC 6.1.1.14; M<sub>r</sub> 83,1 kDa; chromosome 7p14.3) belongs to the family of aminoacyl tRNA synthetases, which catalyze the ester bond of amino acids to their specific transport RNA (tRNA). The latter ones are engaged in the transport of amino acids for their assembly into the nascent polypeptide chain within the ribosomes.

### Autoantibodies

The indirect immunofluorescence test (HEp-2-cells) of sera containing anti-tRNA synthetase antibodies reveals an exclusive cytoplasmic fluorescence pattern. The anti-EJ antibodies react with multiple conformational and conformation independent epitopes of the antigen. Some antibodies also recognize the catalytic domain of the synthetase and inhibit its catalytic activity *in vitro*. The antibodies largely belong to the immunoglobulin isotype IgG.

### Prevalence

Antibodies against the glycyl-tRNA synthetase can be detected in up to 3 % of adult patients manifesting polymyositis/dermatomyositis and/or myositis associated interstitial lung disease. In adults the antibodies can be detected early in the beginning of the disease and sometimes also prior to the onset of the clinical manifestations.

### Clinic

Patients exhibiting antibodies against glycyl-tRNA may develop an antisynthetase syndrome, which presents itself with varying symptoms of myositis, interstitial lung disease, arthritis, so called "mechanic hands" (rough, cracked skin at the tips and lateral aspects of the fingers forming irregular dirty-appearing fissures because of hyperkeratosis), Raynaud's phenomenon, sclerodactyly, calcinosis cutis and sicca-syndrome. The clinical manifestations of the antisynthetase syndromes may vary according to the antigen specificity of the respective anti-synthetase antibodies (table 1).

**Table 1** Clinical manifestations in anti-EJ positive patients (Hamaguchi et al. 2013).

DM	CADM	PM	DM/PM-OM	SSc	ILD	LES
37 %	18 %	13 %	3 %	3 %	26 %	-
DM	dermatomyositis					
CADM	clinically amyopathic dermatomyositis					
DM/PM-OM	DM/PM-overlap					
PM	polymyositis					
SSc	systemic sclerosis					
ILD	interstitial lung disease					
SLE	systemic lupus erythematosus					

Autoantibodies against tRNA synthetases are mutually exclusive. The simultaneous occurrence of two ant-tRNA-synthetase antibodies of different antigen specificities is extremely rare. But their association with antibodies not specific for myositis, so called myositis-associated anti-



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bodies (MAA), directed against topoisomerase, centromeres, U1snRNP, Th/To, U3snRNP, Sm, SS-A/Ro 52 or SS-A/La may be seen quite often.

### Literature

Ge Q, Trieu EP, Targoff IN. Primary structure and functional expression of human Glycyl-tRNA synthetase, an autoantigen in myositis. *J Biol Chem* (1994); 269(46): 28.790 - 28.797 (PMID: [7961834](#)).

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