CYREX® Laboratories

CLINICAL SPECIFICATIONS

ALPHA-MYOSIN

Function:

Myosin, the major contractile protein, converts chemical energy into mechanical force through hydrolysis of ATP. α-Myosin is almost exclusively expressed in cardiac tissue.

Antibodies Appear:

Autoimmune Myocarditis[3]
Dilated Cardiomyopathy[3]
Myasthenia Gravis[5]
Rheumatic Heart Disease[2]

Known Cross-Reactions: Group A *Streptococcus pyogens*,[2] *Streptococcus mutans*,[6] streptococcal M protein,[7] striated muscle,[5] cytomegalovirus[8]

Clinical Significance:

As suggested in an experimental assay,[1] in which anti-myosin antibodies caused an increased calcium uptake and retention, leading to myocyte dysfunction and possibly cell death, anti-myosin antibodies may be detrimental to cardiac function. However, elevated antibodies to α-Myosin have been found in dilated cardiomyopathy pedigrees with both familial and non-familial disease, and thus do not support the concept of playing a primary pathogenic role.[4] These antibodies are more likely to be used as a marker for predisposition.[3] A high percentage of asymptomatic relatives of patients with dilated cardiomyopathy also have elevated antibodies to myosin-alpha[3] and should be monitored for early signs of autoimmune myocarditis. Due to cross reactivity, patients with Rheumatic Fever or Myasthenia Gravis should be assessed for autoimmune myocarditis.

References:

1. Bick, et al. Effects of IgM from rheumatic fever patients on intracellular calcium levels of neonatal rat cardiac myocytes. Life Sci, 2003; 73:2101-2111.
2. Faé, et al. Mimicry in recognition of cardiac myosin peptides by heart-intralesional T cell clones from rheumatic heart disease. J Immunol, 2006; 176:5662-5670.
3. Goldman, et al. Autoimmunity to α myosin in a subset of patients with idiopathic dilated cardiomyopathy. Br Heart J, 1995; 75:598-603.
4. Herskowitz, et al. Concepts of autoimmunity applied to dilated cardiomyopathy. J Am Coll Cardiol, 1993; 22:1385-1388.
5. Williams, et al. Serum antibodies and monoclonal antibodies secreted by thymic B-cell clones from patients with Myasthenia Gravis define striational antigens. Ann N Y Acad Sci, 1987; 505(1):168-179.
6. Ackermans, et al. Anti-IgG antibodies in rheumatic diseases cross-react with *Streptococcus mutans* SR antigen. Clin Exp Immunol, 1991; 85:265-269.
7. Quinn, et al. Immunological relationship between the class I epitope of streptococcal M protein and myosin. Infect Immun, 1998; 66(9):4418-4424.
8. Lawson, et al. Mouse cytomegalovirus infection induces antibodies which cross-react with virus and cardiac myosin: a model for the study of molecular mimicry in the pathogenesis of viral myocarditis. Immunology, 1992; 75:513-519.