

IgG Anti-RNA Polymerase III

PREDICTIVE MARKER FOR SYSTEMIC SCLEROSIS (SCLERODERMA)

Clinical Background

- Systemic sclerosis (SSc) is a rare multisystem autoimmune disease of unknown etiology characterized by vascular abnormalities, hardening of the skin, accumulation of connective tissue in various organs, and autoantibodies against various cellular antigens.
- Stimulation of fibroblasts causes an overproduction of collagen and other extracellular proteins affecting connective tissue of the skin and internal organs such as the gastrointestinal tract (i.e., esophagus, lower GI), lungs, heart, and kidneys.
- Limited cutaneous SSc (lcSSc) and diffuse cutaneous SSc (dcSSc) are the two recognized subsets. The majority (~80 percent) of SSc patients have the limited form of the disease and typically produce IgG autoantibodies against centromere. In dcSSc, there is rapid progression of disease involving one or more internal organs.
- Genetic and environmental factors are thought to play a role in SSc.
- Treatment is aimed at improving symptoms.
- Prognosis varies based on subset of SSc, presence of specific autoantibodies and affected organs.

Epidemiology

- Incidence: 3–20:1,000,000.
- Age: peak onset is 20s–30s.
- Sex: male<female; 1:3–8.
- Ethnicity: overall slight increase in frequency for African-Americans compared to Caucasians; 10-fold increase in Choctaw Indians (Southern Oklahoma).

Pathophysiology and Immunology

- IgG anti-RNA polymerase III is found in 11–23 percent of patients with SSc and is highly specific (98–100 percent). It is strongly associated with dcSSc, renal crisis, and a high rate of mortality.
- The majority of anti-RNA polymerase positive patients are negative for anti-centromere and anti-Scl-70 (separate serologic group).^{1–4}

Indications for Ordering

Patients with clinical manifestations of systemic sclerosis (scleroderma).

Interpretation

Positive results (≥ 20 units) support a diagnosis of systemic sclerosis (scleroderma) and are strongly associated with the diffuse form of systemic sclerosis.

Limitations

- Test results alone are not diagnostic. Results should be used in conjunction with other clinical findings.
- Negative results do not rule out systemic sclerosis (scleroderma).

Methodology

IgG anti-RNA polymerase III antibodies are detected and measured semi-quantitatively using standard enzyme immunoassay (EIA) techniques.

Related Tests

- Anti-Nuclear Antibodies (ANA), IgG Screen with Reflex to IFA Titer (0050080)
- Connective Tissue Diseases Profile (0051668)
- Centromere antibody, IgG (0050714)
- Scleroderma (Scl-70) (ENA) Antibody, IgG (0050599)
- PM/Scl-100 Antibody, IgG, by Immunoblot with Reflex to ANA IFA (2003040)

References

1. Kuwana M, et al. Enzyme-linked immunosorbent assay for detection of anti-RNA polymerase III antibody: analytical accuracy and clinical associations in systemic sclerosis. *Arthritis Rheum* 2005;52:2425–32.
2. Kuwana M, Kimura K, Kawakami Y. Identification of an immunodominant epitope on RNA polymerase III recognized by systemic sclerosis sera: application to enzyme-linked immunosorbent assay. *Arthritis Rheum* 2002;46:2742–7.
3. Steen VD and Medsger TA. Long term outcomes of scleroderma renal crisis. *Ann Intern Med* 2000;133:600–3.
4. Meyer OC, et al. Disease subsets, antinuclear antibody profile, and clinical features in 127 French and 247 US adult patients with systemic sclerosis. *J Rheumatol* 2007; 34:104–9.

Test Information

2001601 RNA Polymerase III Antibody, IgG

For specific collection, transport, and testing information, refer to the ARUP website at www.aruplab.com.
For information on test selection, ordering, and interpretation, refer to ARUP Consult[®] at www.arupconsult.com.