BIONEXT
LABORATOIRE D'ANALYSES MÉDICALES

AUTOIMMUNITY
ANTINUCLEAR ANTIBODIES AND CONNECTIVE TISSUE DISORDERS

Connective tissues disorders include a series of autoimmune disorders (lupus erythematosus, scleroderma, Sjögren syndrome etc.) which are more or less prevalent, depending on the condition and the population studied. An antinuclear antibodies test is the first-line biology test for screening connective tissue disorders.

The test classically uses indirect immunofluorescence on Hep-2 cell cultures. The test provides two types of information: **the antibody titre** and **the microscopic appearance of the fluorescence**. Depending on that information, additional tests for antibody identification are carried out.

The presence of antinuclear antibodies in the healthy population is frequent. That frequency increases in proportion with age. The efficiency of the biological test depends on the degree of dilution of the serum used for screening by the laboratory.

Screening dilution	Sensitivity	Specificity	Prevalence in healthy individuals
1/80	88%	59%	13 - 30%
1/160	84%	73%	6 - 20%
1/320	82%	80%	4 - 10%
1/640	77%	86%	1 - 3%

Connective tissue diseases

Connective tissue diseases, which used to be called collagen diseases, are non-organ specific autoimmune disorders that mainly affect conjunctive tissues. The presence of autoantibodies leads to the **formation of immune complexes** that are deposited in the tissues and result in an **inflammatory reaction**. The higher the collagen content in the conjunctive tissue, the more significant the pathological process.

Joints, skin and muscles are the tissues with the most collagen. That is why these are the locations with the greatest clinical implications.

Connective tissue diseases are classified into three groups: **specific, undifferentiated and associated**.
They all share common clinical criteria, with variable frequencies:
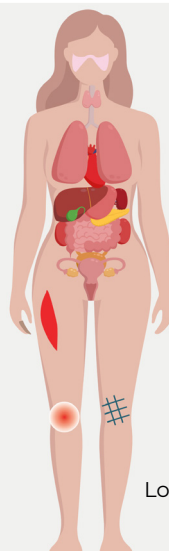
Oesophageal dysfunction (40%)

Pulmonary disease (10%)

Raynaud syndrome (80%)

Myalgia (55%)

Arthralgia (55%)

Synovitis (30-40%)

Malar rash (3-10%)

Dry syndrome (25%)

Photosensitivity (15-25%)

Sclerodactyly (10%)

Fatigue (80%)
Fever

Low white blood cell count (10-25%)

Usefulness of antinuclear antibody tests

Confirming **a diagnosis** › Classifying **the disease** › Assessing **activity** › Appreciating **severity** › Monitoring **development** › Predicting **complications**

Clinical associations

Lupus Erythematosus	**Sjögren's syndrome**	**Myositis**	**Dermatomyositis**	**Antisynthetase syndromes**
DsDNA, Nucleosomes, Sm PCNA, SSA, RNP	SSA, SSB	SRP, cN1a HMGCR	Mi2, SAE1/2, NXP2 TIF1, MDA5	Jo-1, PL7, PL12, EJ OJ, KS, ZO, HA

Scleroderma	**Scleromyositis**	**Mixed Connectivity**	**Healthy Subject**
Centromeres, Th/To SCL70, Fibrillarin, RNApolymerase III	PmSCL Ku	RNP	DFS70

Primitive biliary cholangitis	**Autoimmune hepatitis**	**Neoplasia**
GP210, , Mitochondria, SP100	Actin	MSA2, MSA3, Mitotic chromosomes Centrioles, Ki67

While testing for antinuclear antibodies, it is possible to detect antibodies that are not associated with a specific disorder. They generally appear with the decrease of some **inflammatory situations** or **viral infections**:

Golgi	Cytoplasmic granules	Nematin	NUMA 1	NUMA 2	Tubulin	Vimentin

In practice

Prescription

If any connective tissue disease is suspected, prescribe an antinuclear antibody test.

If any specific connective tissue disease is suspected, prescribe a test for the antibody (e.g. anti-SSA, anti-DNA) or the suspected syndrome (e.g. antisynthetase syndrome)

Add **clinical information** on the prescription

Identification tests are always added if the test is positive or if the microscopic appearance is characteristic

Return time **2 to 7 days** depending on the additional tests carried out

Key points

✓ Connective tissue disease mainly affect collagen-rich tissues (**joints, skin, muscles**)

✓ A low titre of unspecific antinuclear antibodies is frequent in the **healthy population**

✓ Testing for antinuclear antibodies **is not limited to connective tissue diseases** (autoimmune hepatic disease, neoplasia, viral infections etc.)

✓ **Advice services** are added to the test report if autoantibodies of interest are found