

Prevalence of anti-DFS70 antibodies in patients with and without systemic autoimmune rheumatic diseases

The main role of the immune system is to protect the body from a wide range of foreign invaders. In some cases, the immune system recognizes a part of the body as “foreign” and starts to attack it, resulting in an autoimmune disease. Several autoimmune diseases are characterized by the presence of antinuclear antibodies (ANA) - proteins that bind to the contents of the cell nucleus and damage it. ANA can be subdivided into several different subtypes, and each subtype has different propensities for specific diseases.

The existence of these antibodies in the blood may be helpful in diagnosing ANA associated autoimmune rheumatic diseases (AARD) such as systemic lupus erythematosus, Sjögren’s syndrome and systemic sclerosis, although ANA may also be found in healthy individuals (up to 20% of the healthy population).

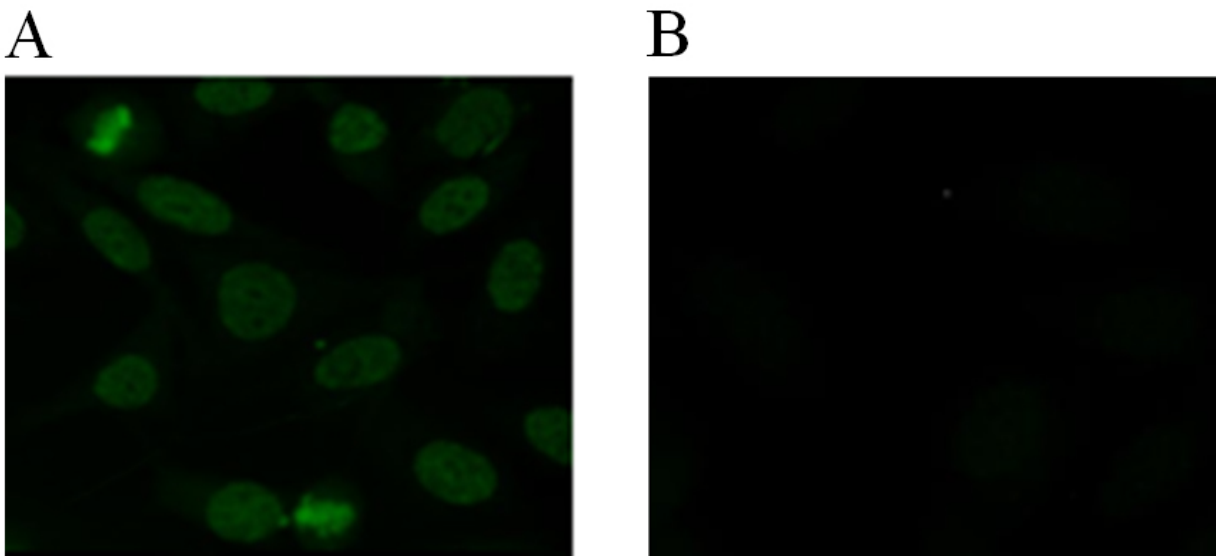


Fig. 1. Inhibition of the DFS pattern by immunoadsorption for anti-DFS70 antibodies.
A: before immunoadsorption, B: complete inhibition following immunoadsorption

Anti-dense fine speckles 70 (anti-DFS70) antibodies are a type of non-disease specific ANA that may be found in healthy individuals and account for half of the ANA positivity in the healthy population. Additionally, they may be found in a wide spectrum of non-autoimmune diseases such as atopic dermatitis, malignancies, eye disorders and others. In patients with autoimmune diseases, they are usually accompanied with different disease specific antibodies, and cases of isolated anti-DFS70 antibodies in these patients are extremely rare. Thus, the presence of isolated

anti-DFS70 antibodies in healthy individuals may exclude the diagnosis of an autoimmune disease and also the future development of such a disease.

One method for the detection of ANA is indirect immunofluorescence (IIF), a technique that uses fluorescent dye to visualize different ANA patterns. As their name suggests, anti-DFS70 antibodies typically present as a dense fine speckled pattern (DFS), but this pattern may be also associated with the presence of disease specific antibodies. In light of this, samples with DFS pattern should be tested by an assay that allows to confirm the presence of a specific type of antibodies such as anti-DFS70 antibodies. Examples of such assays are the enzyme-linked immunosorbent assay (ELISA) and the chemiluminescence immunoassay (CIA).

Recently, a novel IIF technique has been developed that is based on immunoabsorption. With this method, anti-DFS70 antibodies are removed from the sample before it is tested by IIF, and therefore they do not affect the resulting pattern.

In our study, we assessed the prevalence of anti-DFS70 antibodies in patients with and without AARDs by two methods: CIA and IIF based on immunoabsorption of anti-DFS70 antibodies.

It was found that isolated anti-DFS70 antibodies were significantly more prevalent in healthy subjects than in patients with AARDs when tested by CIA (10.9% vs 1.9%). In addition, a very good agreement was found between CIA and the IIF results without immunoabsorption. In 80% of the samples obtained from patients without AARDs, immunoabsorption effectively inhibited the anti-DFS70 antibodies and led to the disappearance of the DFS pattern (Fig. 1). This finding shows that the immunoabsorption method overcomes a significant limitation of the IIF assay associated with the presence of anti-DFS70 antibodies, and significantly increases the specificity of the ANA IIF test for AARDs.

Our data confirm that isolated anti-DFS70 antibodies may help in differentiating between ANA positive healthy individuals and AARD patients. Consequently, the detection of anti-DFS70 antibodies should be included in ANA testing algorithms to aid in the interpretation of ANA positivity without underlying AARD.

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