

Streptococcal Antibody Tests

Definition

Streptococcal infections are caused by a microorganism called *Streptococcus*. Three streptococcal antibody tests are available: the Antistreptolysin O titer (**ASO**), the Antideoxyribonuclease-B titer (**anti-Dnase-B, or ADB**), and the **Streptozyme test**.

Antistreptolysin O titer (ASO)

The ASO titer is used to demonstrate the body's reaction to an infection caused by group A Beta-hemolytic streptococci. Group A streptococci produce the enzyme streptolysin O, which can destroy (lyse) red blood cells.

Antideoxyribonuclease-B titer (Anti-DNase B, or ADB)

Anti-DNase-B, or ADB, also detects antigens produced by group A strep. and is elevated in most patients with rheumatic fever and poststreptococcal glomerulonephritis. This test is often done concurrently with the ASO titer, and subsequent testing is usually performed to detect differences in the acute and convalescent blood samples. When ASO and ADB are performed concurrently, 95% of previous strep infections are detected. If both are repeatedly negative, probably is that the patient's symptoms are not caused by a poststreptococcal disease.

Streptozyme

The streptozyme test is often used as a screening test for antibodies to the streptococcal antigens NADase, DNase, streptokinase, streptolysin O, and hyaluronidase. This test is most useful in evaluating suspected poststreptococcal disease following *Streptococcus pyogenes* infection, such as rheumatic fever.

Streptozyme has certain **advantages** over ASO and ADB. It can detect several antibodies in a single assay, and it is unaffected by factors that can produce false-positives in the ASO test. **The disadvantages** are that, while it detects different antibodies, it does not determine which one has been detected, and it is not as sensitive in children as in adults.

Purpose:

The antistreptolysin O titer (ASO) is ordered primarily to determine whether a previous group A *Streptococcus* infection has caused a poststreptococcal disease, such as scarlet fever, rheumatic fever, or a kidney disease called glomerulonephritis.

The anti-DNase-B (ADB) test is performed to determine a previous infection of a specific type of *Streptococcus*, group A beta-hemolytic *Streptococcus*. Identification of infections of this type are particularly important in suspected cases of acute rheumatic fever (ARF) or acute glomerulonephritis.

Streptozyne is a screening test used to detect antibodies to several streptococcal antigens.

Precautions

- 1- Increased levels of fats, called beta lipoproteins, in the blood can neutralize streptolysin O and cause a false-positive ASO titer.
- 2- Antibiotics, which reduce the number of streptococci and thereby suppress ASO production, may decrease ASO levels.
- 3- Steroids, which suppress the immune system, consequently may also suppress ASO production.
- 4- Also Group A streptococcal infections of the skin may not produce an ASO response.
- 5- Antibiotics also may decrease anti-DNase-B (ADB) levels.

Principle

ASO test method is based on an immunologic reaction between Streptococcal antigens bound to biologically latex particles and streptococcal antibodies in the test sample. Visible agglutination occurs when increased antibody level, are present in the test specimen.

Why the Test is Performed

This test is done if symptoms of a previous infection by group A *Streptococcus* occur

Some symptoms of rheumatic fever may include:

- Fever
- Joint swelling and pain in more than one joint.
- Rapid, jerky movements.
- Skin rash
- Sometimes the heart can become inflamed (carditis); this may not produce any symptoms but also may lead to shortness of breath, heart palpitations, or chest pain

Some symptoms of glomerulonephritis may include:

- Fatigue, decreased energy
- Decreased urine output
- Bloody urine
- Rash
- Joint pain
- Swelling (edema)
- High blood pressure

When is it performed?

Antibody appears in the blood serum one week to one month after the onset of a *strep.* infection.

The diagnosis of a previous strep infection is confirmed when serial titers of ASO rise over a period of weeks, then fall slowly. ASO titers peak during the third week after the onset of acute symptoms of a streptococcal disease; at six months after onset, approximately 30% of patients exhibit abnormal titers.