= Rapid strep test =

The rapid strep test (RST) , or rapid antigen detection test (RADT) , is a rapid diagnostic test that is widely used in clinics to assist in the diagnosis of bacterial pharyngitis caused by group A streptococci (GAS) , sometimes termed strep throat . There are currently several types of rapid strep test in use , each employing a distinct technology . However , they all work by detecting the presence of GAS in the throat of a patient by responding to GAS @-@ specific antigens on a throat swab .

= = Applications = =

A rapid strep test may assist a clinician in deciding whether to prescribe an antibiotic to a patient with pharyngitis , a common infection of the throat . Viral infections are responsible for the majority of pharyngitis , but a significant proportion (20 % to 40 % in children and 5 % to 15 % in adults) is caused by bacterial infection . The symptoms of viral and bacterial infection may be indistinguishable , but only bacterial pharyngitis can be effectively treated by antibiotics . Since the major cause of bacterial pharyngitis is GAS , the presence of this organism in a patient 's throat may be seen as a necessary condition for prescribing antibiotics . GAS pharyngitis is a self @-@ limiting infection that will usually resolve within a week without medication . However , antibiotics may reduce the length and severity of the illness and reduce the risk of certain rare but serious complications .

RSTs may also have a public health benefit . In addition to undesirable side @-@ effects in the individual , inappropriate antibiotic use is thought to contribute to the development of drug @-@ resistant strains of bacteria . By helping to identify bacterial infection , RSTs may help to limit the use of antibiotics in viral illnesses , where they are not beneficial .

Some clinical guidelines recommend the use of RSTs in patients with pharyngitis , but others do not . US guidelines are more consistently in favor of their use than their European equivalents . The use of RSTs may be most beneficial in the third world , where the complications of streptococcal infection are most prevalent , but their use in these regions has not been well studied .

Microbial culture from a throat swab is a reliable and affordable alternative to an RST which has high sensitivity and specificity . However , a culture requires special facilities and usually takes 48 hours to give a result , whereas an RST can give a result within several minutes .

= = Procedure = =

The patient ? s throat is first swabbed to collect a sample of mucus . In most RSTs , this mucus sample is then exposed to a reagent containing antibodies that will bind specifically to a GAS antigen . A positive result is signified by a certain visible reaction . There are three major types of RST : First , a latex fixation test , which was developed in the 1980s and is largely obsolete . It employs latex beads covered with antigens that will visibly agglutinate around GAS antibodies if these are present . Second , a lateral flow test , which is currently the most widely used RST . The sample is applied to a strip of nitrocellulose film and , if GAS antigens are present , these will migrate along the film to form a visible line of antigen bound to labeled antibodies . Third , optical immunoassay is the newest and more expensive test . It involves mixing the sample with labeled antibodies and then with a special substrate on a film which changes colour to signal the presence or absence of GAS antigen .

= = Interpretation = =

The specificity of RSTs for the presence of GAS is at least 95 % , with some studies finding close to 100 % specificity . Therefore , if the test result is positive , the presence of GAS is highly likely . However , 5 % to 20 % of individuals carry GAS in their throats without symptomatic infection , so the presence of GAS in an individual with pharyngitis does not prove that this organism is

responsible for the infection . The sensitivity of lateral flow RSTs is somewhat lower at 65 % to 80 % . Therefore , a negative result from such a test cannot be used to rule out GAS pharyngitis , a considerable disadvantage compared with microbial culture , which has a sensitivity of 90 % to 95 % . However , newer optical immunoassay RSTs have been found to have a much higher sensitivity of 94 % .

Although an RST cannot distinguish GAS infection from asymptomatic carriage of the organism , most authorities recommend antibiotic treatment in the event of a positive RST result from a patient with a sore throat . US guidelines recommend following up a negative result with a microbial culture , whereas European guidelines suggest relying on the negative RST .