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Serologic Test for Syphilis

Everything you always wanted to know about utilization and interpretation of serologic test for syphilis

Routine blood tests performed in most Alaska laboratories are either the Rapid Plasma Reagin (RPR) or VORL antigen tests. These nontreponemal antigen tests are used for syphilis screening because of their economy and availability. They usually become reactive within ten days after full incubation of syphilis. Since the minimum incubation period is ten days and the maximum is 90 days, syphilis cannot be ruled out by blood test short of 100 days. However, in a symptomatic patient, a non-reactive test after a symptom duration of four weeks should rule out syphilis.

When the RPR or VORL is reactive, the quantitative test is more informative than a qualitative test. Quantitation is a dilution of serum in geometric proportions. The last dilution to produce a reactive result is the titer; e.g., a titer of 1:16 means the serum is reactive 1:16 but nonreactive at 1:32 dilution. This is sometimes referred to as positive at 16 "dils". Quantitation provides a standard from which change or lack of change can be measured. If the disease is inactive but serofast, the titer will not change on subsequent testing (one dilution change either way, is not considered significant in these cases).

In most cases of early syphilis the RPR or VORL will become nonreactive with adequate treatment. This non-reactive result should occur roughly 6 to 18 months after treatment. In cases of syphilis of more than 1-2 years duration, the patient will likely become serofast (i.e., maintain a constant antibody level) even though adequately treated. A patient who was serofast, with record of adequate treatment, and is now showing a rapid rising titer is likely to have been reinfected.

Reactive results with the RPR or VORL, coupled with clinical and/or epidemiologic evidence, indicate syphilis with a high degree of reliability. However, false positive reactions do occur. Common causes of false positives are acute viral and bacterial illness, pregnancy, collagen disease and drug addition. Generally, false positive reactions are less than 8 "dils" and usually last several weeks to several months. If a false positive RPR persists, an underlying reason should be sought. Verification of a suspected false positive is best accomplished with a treponemal antigen test, the most widely used being the FTA (Fluorescent Treponemal Antigen) test. Treponemal antigen tests are more specific since they measure antibodies to *T. pallidum*. In RPR or VORL seroreactive patients with no clinical signs, the FTA will either confirm a diagnosis of latent syphilis if reactive or introduce a diagnosis of "false positive" if negative. The FTA is usually not subjected to quantitation. A borderline reading indicates that the test ought to be repeated. Once syphilis has incubated the FTA will become reactive, usually a few days prior to the RPR or VORL. Once a patient's serum is FTA reactive, it will remain so, generally for life, even with adequate treatment.