PCR Replaces Group A Strep Culture

Group A beta-hemolytic streptococcus (S. pyogenes) is responsible for up to 30% of cases of acute pharyngitis. The clinical features of pharyngitis caused by group A strep include purulent exudate, fever, and anterior cervical adenopathy. Beta-hemolytic streptococci groups C & G can cause pharyngitis with symptoms and signs that are indistinguishable from group A strep infections, but are more commonly found in adolescents and young adults.

The mainstay of diagnosis for group A strep pharyngitis is rapid antigen testing of throat swabs. The obvious advantage of rapid antigen testing is the immediate availability of results and the ability to perform testing in the clinic setting. However, a major disadvantage of these tests is less than optimal sensitivity, so that culture back-up of negative tests is essential. Culture is also necessary to identify the presence of group C or G streptococci, which are not detected by rapid antigen tests. Unfortunately, final culture results are generally not available until 24-48 hours after specimen collection.

Recently, Saint Luke’s Regional Laboratories evaluated Roche Lightcycler real-time PCR for the detection of group A strep from throat swabs. Samples included those previously tested by rapid antigen testing and those tested by culture alone. The greatest advantage of real-time PCR was seen in comparison to culture. Real-time PCR increased the yield of positive group A strep (GAS) results by nearly 20%.

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<thead>
<tr>
<th>Lightcycler PCR vs. Culture Results</th>
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<tr>
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<tr>
<td>GAS PCR pos</td>
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<td>GAS Culture pos</td>
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<td>GAS Culture neg</td>
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Although some literature reports have shown group A strep PCR to yield significantly more positive results than rapid antigen tests with direct testing of throat swabs, this was not apparent during our evaluation.

Effective January 2, 2008 Saint Luke’s Regional Laboratories will replace back-up culture of throat swabs with real-time PCR. Results will be available by the following day after submission of samples. Beta-strep groups C & G are also detected by the same assay & will be reported when present. No change in sample submission is required.

New Wound Culture Gram Stain Policy

Wound specimens represent one of the most complex cultures that the Microbiology lab interprets. Much information about adequacy of the specimen and the relevance of the organisms identified can be gained from a Gram stain of the original specimen. In general, the presence of many epithelial cells indicates a superficial collection, and the organisms identified may represent skin flora or contamination. The presence of white blood cells on the Gram stain is more indicative of pathogenic organisms from the culture. Effective immediately, Microbiology will perform and report Gram stain results from all inpatient wound culture specimens.

Drug Induced Thrombocytopenia

Drug induced thrombocytopenia can be caused by dozens of different medications and should be suspected in any patient who presents with acute thrombocytopenia of unknown origin. Typically, a patient will have taken the sensitizing drug for about 1 week or intermittently over a longer period of time before presenting with petechial hemorrhages and ecchymoses. Platelet inhibitors are the exception to this general rule because petechiae may occur within 1 or 2 days after an apparent first exposure. Systemic symptoms such as lightheadedness, chills, fever, nausea, and vomiting often precede bleeding. Severely affected individuals have florid purpura and bleeding from nose, gums and gastrointestinal or urinary tract. In adults, the presence of severe thrombocytopenia, with a platelet count <20,000/uL, increases the likelihood that a patient has drug induced thrombocytopenia. If the causative medication is promptly discontinued, symptoms often resolve.
within 2 days and the platelet count returns to normal within a week.

The medications most commonly associated with drug induced thrombocytopenia are listed below.

**Analgesics**
- Acetaminophen
- Diclofenac
- Ibuprofen
- Naproxen
- Propoxyphene

**Anticonvulsant & sedatives**
- Carbamazepine
- Diazepam
- Fentanyl
- Phenytoin
- Trimipramine
- Valproic acid

**Antimicrobial**
- Cephalosporins
- Linezolid
- Penicillins
- Rifampin
- Sulfonamides
- Trimethoprim
- Vancomycin

**Cardiac**
- Amrinone
- Beta blockers
- Digoxin
- Procainamide

**Chemotherapeutic**
- Fludarabine
- Oxaliplatin

**Cinchona alkaloids**
- Quinine
- Quinidine

**Diuretics**
- Chlorothiazide
- Furosemide
- Hydrochlorothiazide

**Heparins**
- Unfractionated
- Low molecular weight

**Histamine Receptor Antagonists**
- Cimetidine
- Ranitidine

**Immune Modulators**
- Cyclosporine
- Interferon alpha & beta
- Rituximab

**Platelet Inhibitors**
- Abciximab
- Clopidogrel
- Dipyridamole
- Eptifibatide
- Tirofiban

**Rheumatic**
- D-penicillamine
- Gold salts
- Infliximab

Many cases of drug induced thrombocytopenia are immune mediated and it is often possible to identify antibodies that react with normal platelets in the presence of the drug but not in its absence. In other cases with a high index of suspicion for drug induced thrombocytopenia, antibody tests are negative, probably because a drug metabolite produced in vivo, rather than the parent drug, is the sensitizing agent. Testing for drug induced platelet antibodies, with the exception of heparin, is technically demanding and only available at a few reference laboratories. Therefore, it is not useful in the immediate care of a patient.

When there is uncertainty about the causative drug, all medications should be discontinued, and pharmacologic equivalents with different chemical structures substituted as necessary. Patients who present with severe thrombocytopenia and wet purpura should be treated with platelet transfusions because of the risk of fatal intracranial and intrapulmonary hemorrhage. The therapeutic benefit of corticosteroids and intravenous immune globulin has not been proven. Once established, drug sensitivity probably persists indefinitely and patients should be advised to avoid permanently the suspected medication.

**Fetal Lung Maturity**
Due to an inability to obtain the materials needed for thin layer chromatography, Saint Luke’s Regional Laboratories discontinued the Fetal Lung Profile test on December 1, 2007. The Fetal Lung Maturity (FLM II) test is available.

**Single Donor Platelets**
Community Blood Center began supplying single donor platelets with a 7 day expiration date on November 15. The increase in storage time from 5 to 7 days should decrease outdating and increase available inventory.