Heparin-Induced Thrombocytopenia
Is SRA the Gold Standard Test?

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"While developing the SRA (serotonin release assay), we really deepened our knowledge base," says Smock, whose coagulation lab is continuously optimizing testing algorithms. "Such algorithms are helpful in determining which patients have HIT or are at high risk of developing it." While ARUP is not the first to offer the SRA for HIT, the assay's time-intensiveness and technical complexities generally restrict it to very specialized labs.

Q: What is heparin-induced thrombocytopenia (HIT)?

A: HIT is a complication of heparin therapy that occurs in a small subset of patients (1 to 5 percent). It is caused by an immune reaction to heparin platelet factor 4 (PF4) complexes, which causes the formation of abnormal antibodies that activate platelets. This can lead to thrombocytopenia and thrombosis. Not all patients who develop antibodies to heparin-platelet factor 4 complexes will develop the HIT syndrome.

Q: What are the strengths of the SRA in detecting HIT?

A: The SRA is considered the gold-standard laboratory test for HIT. It is a platelet-activation assay that determines whether a patient has heparin-PF4 antibodies that have platelet-activating properties. This is in contrast to HIT ELISA assays, which detect only the presence of the antibodies.

Q: What are the testing methods involved?

The SRA involves incubating patient serum with washed donor platelets and different concentrations of heparin. Serotonin released into the reaction supernatant is quantified and serves as a marker of platelet activation. Patterns of serotonin release in the presence of therapeutic and supra-therapeutic heparin concentrations are analyzed to classify specimens as positive or negative.

HIT-positive serum causes platelet activation and serotonin release in the presence of a therapeutic heparin concentration; this is inhibited in the presence of a supra-therapeutic heparin concentration.

Q: Which patients are most susceptible to HIT and the likeliest candidates for this test?

A: Heparin exposure places a patient at risk for HIT, although only a small percentage will develop the syndrome. This risk varies depending on the setting and the type of heparin being used.

Patients who develop a drop in their platelet counts 5 to 10 days after heparin exposure should be evaluated for HIT. Initial evaluation includes use of clinical scoring systems, followed by laboratory testing in moderate- or high-probability patients.

ELISA tests that detect HIT antibodies are often first-line tests due to their sensitivity and high negative predictive value. However, HIT ELISA assays have imperfect specificity since they can't determine whether the antibodies have the platelet-activating properties that cause HIT. There is correlation between the strength of the ELISA reaction and the likelihood of HIT.

As a functional platelet activation assay, the SRA has good sensitivity and specificity for HIT. SRA testing is helpful in further evaluating patients with positive HIT ELISA results. A common and useful algorithm for HIT testing is one where positive ELISA results are reflexed to the SRA for confirmation.