SEROTONIN RELEASE ASSAY

BloodCenter of Wisconsin
Platelet and Neutrophil Immunology Laboratory offers
Serotonin Release Assays for detection of Heparin-Dependent Platelet Antibodies

BACKGROUND:
Heparin-induced thrombocytopenia (HIT) associated with thrombosis is an immune complex mediated disorder that can cause morbidity and mortality in patients receiving heparin therapy. Prompt diagnosis is paramount to appropriate patient management. The diagnosis of HIT is suspected when

1) a sustained decline in the platelet count occurs during heparin therapy
2) the platelet count recovers after heparin is discontinued, and
3) no other causes of thrombocytopenia are evident.

The Serotonin Release Assay (SRA) is a complex test to perform and is best performed in an experienced platelet antibody reference laboratory. The Platelet & Neutrophil Immunology Laboratory of BloodCenter of Wisconsin has more than 17 years of experience performing the SRA and is one of very few laboratories in the U.S. to provide this service.

METHOD:
^{14}C-Serotonin release assay (SRA).

LIMITATIONS:
- The presence of "non-drug" antibodies reactive with platelets (e.g., HLA Class I, autoantibodies, platelet-specific antibodies) in the patient's serum can induce heparin independent release of serotonin in the SRA.
- Testing with Lovenox® (enoxaparin) versus unfractionated heparin has not been validated as a useful guide to clinical management.

REASONS FOR REFERRAL:
The SRA[1] is still considered the "gold standard" assay for the detection of heparin-dependent antibodies in HIT. Various studies have reported the sensitivity and specificity of the SRA to be as high as 90% and 100%, respectively.[2,3]
- Because of its high specificity, the SRA is often useful for confirmation of weak or "inconclusive" results obtained with the highly sensitive PF4/ELISA.[4,5]
- The SRA can also be used to evaluate samples for antibodies that cross-react with low molecular weight heparins such as Lovenox®.

PO Box 2178
Milwaukee, WI 53201-2178
Location/Sample Deliveries:
638 N. 18th St. Milwaukee, WI 53233-2121
p800-245-3117 | f414-937-6202 | www.bcw.edu

REFERENCE INTERVAL:

- A positive result requires ≥ 20% release of serotonin with low dose heparin and < 20% release in the presence of a high concentration of heparin.
- Percent release with low dose and high dose heparin are reported.
- Results are interpreted as negative, borderline positive, or positive.

SPECIMEN REQUIREMENTS:
5 ml refrigerated serum

SHIPPING REQUIREMENTS:
Place the specimen and the test requisition form in plastic bags, seal, place in a Styrofoam container and surround with cold packs. Seal the Styrofoam container, place in a sturdy cardboard box and tape securely. Ship the package in compliance with your overnight carrier guidelines. Label with the following address:

Client Services/Platelet and Neutrophil Immunology Laboratory
BloodCenter of Wisconsin
638 N. 18th St.
Milwaukee, WI 53233
Phone: 800-245-3117 x6250

TURNAROUND TIME: 1-3 days
Performed 6 days per week, Monday through Saturday

CPT CODES: 86022

REFERENCES:
1) Sheridan D, Carter C, Kelton JG. A diagnostic test for heparin-induced thrombocytopenia. Blood 1986, 67:27-30.
2) Eichler P, Rashke R, Lubenow N, Meyer O, Shwind P, Greinacher A. The new ID-heparin/PF4 antibody test for rapid detection of heparin-induced antibodies in comparison with functional and antigenic assays. Brit J Haematol 2002; 116:887-891.
3) Arepally G, et al. Comparison of PF4/heparin ELISA assay with the 14C-serotonin release assay in the diagnosis of heparin-induced thrombocytopenia. AJCP 1995; 104:648-654.
4) Collins JL, Aster RH, Moghaddam M, Piotrowski M, Strauss TR, McFarland JG. Diagnostic testing for heparin-induced thrombocytopenia (HIT): an enhanced platelet factor 4 complex enzyme linked immunosorbent assay (PF4 ELISA). Blood 1997; 90 (Suppl 1):461a.
5) Visentin TP, Ford SE, Scott JP, Aster RH. Antibodies from patients with heparin induced thrombocytopenia/ thrombosis are specific for platelet factor 4 complexed with heparin or bound to endothelial cells. JCI 1994, 93:81-88.
6) Davoren A, Aster RH. Heparin-induced thrombocytopenia and thrombosis. Am J Hematology 2006; 81:36-44.

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