Ordering Platelet Antibody Studies

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There are many tests available for platelet antibodies and selection of the appropriate and most meaningful test will vary based on the scenario. In Cerner we have an orderable for the four most commonly utilized tests. These are outlined below to facilitate selection. If you have questions, please call Marilyn Hamilton at 234-3811 or beeper 816-458-5937 before placing the order.

In Cerner Order Entry ‘platelet antibody’ will post the following choices:

- Platelet Antibody-Autoantibody
- Platelet Antibody-Heparin Induced
- Platelet Antibody-Maternal
- Platelet Antibody-Screen

**Autoantibody**

This is the best test for Immune (Idiopathic) Thrombocytopenic Purpura (ITP). Approximately 85% of patients with autoimmune thrombocytopenia will have platelet associated IgG, IgM or both. This test requires a large volume of blood because patients generally have low platelet counts and it is the antibody bound to the platelets which is identified. The platelets are washed and the bound antibodies are eluted. The eluate and patient plasma are incubated in microtiter wells coated with platelet glycoproteins llb/llla and lb/lX and la/lIa. Only these glycoproteins are detected.

The timing of specimen collection is important. Samples collected from patients recently transfused may reflect characteristics of the transfused platelets. It is best to wait 4 days after platelet transfusion to assure that the platelets are from the patient.

Specimen: blood in ACD-A is preferred; EDTA is acceptable

- 40 mL for platelet count <100,000 & 20 mL for platelet count >100,000

Specimens must arrive in the CMH Lab Monday through Thursday before 2 PM. Testing is performed Monday-Friday at the Blood Center of Southeast Wisconsin. The sample must be received at the facility within 4 days of draw. Turn around time is 3-7 days.

**Heparin Induced (Heparin Dependent)**

This is the screening test for Heparin-Induced Thrombocytopenia (HIT) and is ordered when there is new development of thrombocytopenia (either a 50% drop in platelet count without other explanation or a platelet count <150,000 without other explanation) with or without development of thrombosis in a patient who has been exposed to heparin for >5 days. The test looks for antibodies to a complex of Platelet Factor 4 (PF4) and heparin. These antibodies activate the platelets and lead to thrombocytopenia and thrombosis.

Specimen: 3 mL blood in plain red top

Specimens must arrive in the CMH Lab Monday through Friday before 2 PM. Testing is performed Monday-Friday at the St. Luke’s Hospital. Testing must be completed within 7-days of draw. Turn around time is 2-7 days.
Maternal—Also posted under: Neonatal Immune Thrombocytopenia (NIT, NAT, NAIT)

NIT results from maternal antibodies which cross the placenta and bind to the platelets of the fetus. The most common cause (80-90%) of this disease is maternal antibodies to the platelet antigen A1 which the mother lacks but the infant has inherited from the father. Several tests are done to investigate NAIT. The maternal platelets are screened for the presence of PL\text{A1} (HPA-1a) antigen. In addition, the maternal serum is screened for general platelet antibodies. This screen detects antibodies to HLA antigens, which are found on platelets, and the common platelet specific antigens including A1. Maternal platelets are screened for higher then normal levels of platelet bound IgG to screen for maternal autoantibodies to platelets. Finally, if paternal blood is available, the maternal serum is tested specifically for antibodies to the paternal platelets. This will detect antibodies to antigens on the paternal platelets and potentially the baby’s platelets which may be very rare (low incidence antigens) – so rare that they are only found in a single family.

Specimen: Blood from PARENTS; no requirements from the child. Requires 6 mL ACD-A. Prefer a specimen is obtained from both the mother and father if possible. Specimens must arrive in the CMH Lab Monday through Friday before 2 PM. Order should be placed on an account for the parent, not the child. Testing is performed Monday-Friday at the Community Blood Center. Turn around time is 3-7 days.

Platelet Antibody Screen

This test is designed to look for antibodies in serum to both HLA antigens and to platelet specific antigens. This is the best test to order for a patient who has had many platelet transfusions and has developed refractoriness to platelet transfusions. This is also the test to use to investigate post-transfusion purpura.

Specimen: Two 2.6 mL ACD-B

Specimens must arrive in the CMH Lab Monday through Thursday before 2 PM. Friday and weekend collection require a call to the CMH Laboratory before collection. Testing is performed Monday-Friday at the Community Blood Center. Turn around time is 3-7 days.

Platelet Antigen Systems

Some understanding of this will facilitate your understanding of the tests discussed above.

Category I

- **ABO Antigens**
  - Type I chains are absorbed
  - Type II chains are intrinsic with variable expression
- **HLA Class I**
  - HLA A and B
  - HLA C antigens are generally very weak

Category II

- Human Platelet Antigens (HPA) found on platelets and megakaryocytes
  - Platelet specific – 26 have been identified
  - Associated with platelet glycoproteins
- Antigens on receptor molecules also found on endothelium, fibroblasts and smooth muscle cells
- Membrane glycoproteins essential for platelet function – receptors for extracellular matrix proteins like collagen, fibronectin and VWF
- Adhesion molecules or integrins: Glycoproteins IIb/IIIa and Ib/IX

CME has been canceled for April.