

HEPARIN-INDUCED THROMBOCYTOPENIA (HIT)

HIT is an increasingly recognized cause of perioperative complications, including skin necrosis, DVT, pulmonary embolism, venous sinus thrombosis, and stroke. In general, the benefits of heparin administration outweigh the risk of HIT, but it must be recognized in order to treat and prevent potentially catastrophic complications.

1. What kind of lab abnormalities and clinical features should raise suspicion for HIT?

In general, HIT should be suspected if a patient's platelet count drops by 50% from preop baseline—this can include a platelet count that remains in the normal range. Platelet counts do not usually fall below 20,000 as a consequence of HIT, and other causes (drug-induced thrombocytopenia, DIC, ITP, etc.) should be suspected. Non-immune-mediated decrease in platelet count is seen in many patients within 2 days of starting heparin, but causes a lesser drop and will usually rebound despite continued heparin treatment.

Case features
suspicious for
HIT:

1. Unexplained thrombocytopenia
 2. Thrombosis associated with thrombocytopenia
 3. Platelet count which has fallen 50 percent or more from a prior value
 4. Necrotic skin lesions at heparin injection sites
- AND
- Prior exposure to heparin

Postoperative patients (particularly those with long spine surgeries) often have depressed platelet counts for days postoperatively, but if the platelet count fails to rebound or starts to fall, a diagnosis of HIT should be entertained.

2. What is the time course of the onset of HIT?

This varies depending on the patient's prior exposure to heparin (and whether they already have antibodies), and can range from less than a day to 2 weeks or more from the last exposure to heparin. It is important to realize that a patient may present with HIT after stopping heparin.

Early: Usually seen in patients with prior exposure to heparin, and hence prior antibodies. Occurs within the first 1-2 days of starting heparin.

Usual: Occurs within 4-10 days of starting heparin therapy. Presumed to be due to the formation of new antibodies.

Late: Occurs following discontinuation of heparin therapy, often after the patient's discharge from the hospital. Should be suspected in a patient returning to the hospital with a new thrombotic complication, particularly after an orthopedic or other surgery where heparin prophylaxis was used.

3. How is the diagnosis of HIT made?

HIT is a clinical diagnosis, but certain lab tests are useful in supporting the diagnosis. HIT is caused by antibodies against the heparin/platelet factor 4 complex, and multiple tests assess for the presence of these antibodies. The ELISA immunoassay that is the most common test used is extremely sensitive but not specific, and hence a negative test can be useful in ruling out the diagnosis, but does not confirm it without further supporting features.

4. How should HIT be treated?

- Stop all heparin products (this includes heparin flushes)
- Start a non-heparinoid anticoagulant (direct thrombin inhibitors argatroban and lepirudin are approved for use in the US)—pharmacy protocols exist for this treatment and will vary from hospital to hospital

- Start warfarin (only AFTER non-heparinoid anticoagulant has been started) with a plan to anticoagulate for at least 6 weeks, but NOT until the patient's platelet count is greater than 100K due to the risk of transient hypercoagulability
- Therapy should be overlapped for at least 5 days prior to discontinuation of the direct thrombin inhibitor
- Hematology consult should usually be involved in treating hospitalized patients with HIT.

5. How can HIT be prevented?

- Low molecular weight heparins (Lovenox, Fragmin, etc.) appear to have a lower risk of HIT, and should be used when appropriate
- Avoid unnecessary use of heparin

6. Can patients with a history of HIT ever be rechallenged with heparin?

While not recommended if other forms of anticoagulation are available, most patients with immune-mediated HIT lose their HIT antibodies within 3 months of ceasing therapy, and short-term heparin use (such as for cardiac bypass surgery) has been shown to be safe. Dialysis patients have also been retreated with heparin without incident, but this data is still forthcoming.

References

1. Coutre, S. Heparin-induced thrombocytopenia. <http://www.uptodateonline.com>. Topic date 9/13/06.
2. Follis F, Schmidt CA. Cardiopulmonary bypass in patients with heparin-induced thrombocytopenia and thrombosis. *Ann Thorac Surg.* 2000;70:2173-2181.