Heparin-Induced Thrombocytopenia

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Patients receive blood thinners (anticoagulants) to treat or prevent blood clots. The most commonly used intravenous anticoagulant is heparin. This Cardiology Patient Page focuses on heparin-induced thrombocytopenia (HIT), a complication of heparin therapy. This complication of heparin is often confusing because in HIT, heparin does the opposite of what it is supposed to do: It forms rather than prevents new blood clots.

What Is Heparin-Induced Thrombocytopenia?
Ordinarily, heparin prevents clotting and does not affect the platelets, components of the blood that help form blood clots. Triggered by the immune system in response to heparin, HIT causes a low platelet count (thrombocytopenia).

Two distinct types of HIT can occur: nonimmune and immune-mediated. Nonimmune HIT, which occurs most frequently, is characterized by a mild decrease in the platelet count and is not harmful. The second type, immune-mediated HIT, occurs much less frequently but is dangerous. Immune-mediated HIT causes much lower platelet counts. Paradoxically, despite a very low platelet count, patients who suffer from HIT are at risk for major clotting problems.

After heparin is administered to a patient, an immune complex can form between heparin and a specific blood factor (platelet factor 4, or “PF4”) that is released by platelets. The body views this “heparin-PF4” complex as a foreign substance. Therefore, an antibody is formed against the heparin-PF4 complex. The antibody binds to this complex and the platelets are destroyed.1

This disruption of platelets can lead to the formation of new blood clots in patients with immune-mediated HIT. The result can be a deep vein thrombosis (in the veins of the thigh or pelvis), pulmonary embolism, or even a heart attack or stroke. However, this does not seem to occur with the mild decrease in platelets associated with nonimmune HIT.

When Does HIT Occur?
Immune-mediated HIT usually occurs between 5 to 14 days after first beginning heparin therapy. However, there are exceptions, with HIT developing infrequently either early (after a recent previous exposure to heparin) or late after heparin exposure.

How Is HIT Diagnosed?
HIT can often be diagnosed by measuring the platelet count and PF4 antibody level in the blood. Symptoms of new blood clot formation may suggest HIT.

Symptoms of deep vein thrombosis include pain or tenderness, sudden swelling, discoloration, visibly large veins, and skin that is warm to the touch. Dislodgement of clot from the deep leg veins and passage into the lungs (pulmonary embolism) may present as shortness of breath, a change in heart rate, sharp chest pain, dizziness, or feelings of anxiety and excessive sweating. Severe indicators of HIT are skin changes that present as bruising or blackening around the heparin injection site as well as the fingers, toes, and nipples that may progress to gangrene. The extremities are especially susceptible to the small clots that form because of HIT. If you have any of these signs or symptoms, call your doctor.

How Is HIT Treated?
The first step is to discontinue heparin on suspicion of HIT. The next step is to treat HIT using an alternative type of anticoagulant. Even though the platelet count is low, it is important to avoid platelet transfusions, which can “add fuel to the fire.”

Medications
Direct thrombin inhibitors (DTI) are a class of anticoagulant medications that do not cause HIT. These drugs are administered by continuous intrave-
Heparin-induced thrombocytopenia (HIT) is caused by a reaction to heparin that is similar to other allergic reactions, but it is not a true allergy. In contrast to many allergies to other medications or foods, the allergy to heparin is not long-lasting. The PF4 antibody that causes HIT will usually disappear after approximately 3 months. Thereafter, heparin may be considered for use if a new clot did not develop from HIT and if the PF4 antibody test is negative. If you have been told that you have HIT or an allergy to heparin, inform your doctor before taking any form of heparin. It is extremely helpful to write down when you were exposed to heparin and when HIT occurred. Helpful information for your healthcare provider is shown in the figure.

Early identification of HIT and avoidance of inappropriate heparin therapy can help promote a safe and effective anticoagulation strategy.

Acknowledgments
We thank Suellen Breakey, RN, PhD, for her contribution to the figure.

Disclosures
None.

References
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Circulation. 2006;114:e355-e356
doi: 10.1161/CIRCULATIONAHA.106.632653
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
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