HEPARIN INDUCED THROMBOCYTOPENIA

Autoimmune Causes of Platelet Deficiency

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Heparin therapy is widely used to prevent and treat clotting disorders. In some people, heparin triggers autoimmune conditions of severe platelet deficiency.

Who is Affected?

Heparin therapy is often used in people with clotting disorders or who may be at risk for blood clots, for instance patients who are bedridden after surgery. Thrombocytopenia is a condition of insufficient platelets or a platelet count below 150,000. Platelets or megakaryocytes are small blood cells necessary for the clotting process. The normal platelet count is 150,000-400,000.

Causes of Thrombocytopenia

Thrombocytopenia is often autoimmune in nature and is commonly known as idiopathic thrombocytopenic purpura or ITP. Purpura is a term used to describe the small purple bruises that occur in people with low platelet counts.

Heparin therapy can cause a number of side effects, with heparin-induced thrombocytopenia (HIT) one of the most severe side effects. Heparin-induced thrombocytopenia occurs in 2-5 percent of patients receiving unfractionated heparin preparations, which are the most common heparin agents used. Of these patients who develop thrombocytopenia, 30 percent will have severe thrombotic (clot-related) complications. Both morbidity and mortality are at high risk in these patients.

Adverse Reactions

Patients with heparin-induced thrombocytopenia who develop severe thrombotic complications will develop clots in their veins (venous thrombosis); clots in their arteries (arterial thrombosis); severe skin necrosis (destruction of skin tissue or skin cell death); and death related to uncontrolled bleeding and blood clots.

Who is at Risk?

Anyone receiving the anticoagulant heparin is at risk. Anticoagulant heparin, either unfractionated or low-molecular weight preparations, is usually delivered intravenously or found in heparin-coated cathethers, or used to flush intravenous lines or ports. Heparin is used in people with deep vein thrombosis (DVT); myocardial infarction (MI); during vascular or cardiac procedures and surgery; who require heparin flushes for indwelling cathethers, ports or lines.
Platelet Autoantibodies

Platelet Factor 4 (PF4) is a protein found in platelets, which is released during platelet activation. Platelet Factor 4 reacts with heparin forming a complex that is recognized as a foreign antigen in some people. This leads to the formation of P4-heparin autoantibodies that target and destroy platelets.

Diagnosis of Heparin–Induced Thrombocytopenia

Heparin-induced thrombocytopenia is diagnosed in:

1. patients whose platelet counts drop (usually a 30-50 percent reduction in platelet count) after heparin administration
2. patients who develop blood clots, skin reactions
3. patients who demonstrate the presence of antibodies to PF4-heparin complex.

Subtypes of Heparin-Induced Thrombocytopenia

Two types of HIT are recognized: Type I and Type II

Type I HIT is characterized by

* Mild thrombocytopenia
* Emerges within 1-2 days of heparin therapy
* Platelet count remains greater than 100,000
* No symptoms
* Seldom detected
* No intervention necessary

Type II HIT is characterized by

* Severe thrombocytopenia
* Emerges more than 5 days following the initiation of heparin therapy
* Platelet count falls to levels less than 100,000
* Caused by autoantibodies
* Can be clinically significant

Treatment of HIT

Treatment consists of discontinuing all forms of heparin therapy and avoiding any forms of coumadin anticoagulant. Platelet transfusions should be avoided because they rarely raise platelet counts and can trigger the production of more platelet antibodies. Administer an FDA approved anticoagulant such as bivalirudin or hirudin even in the absence of thrombosis.

Resources: