



Clinical Pharmacology & Toxicology Pearl of the Week

~ Drug-Induced Thrombocytopenia ~

Drug-Induced Thrombocytopenia (DITP) is a potentially serious complication of many medications with the potential risk of life threatening hemorrhage. There are **two broad categories** of DITP

1. Immune-mediated platelet destruction

- a. Drug-dependent antibodies → Drug stimulates antibody production; drug embeds in platelet glycoproteins and serves as epitope on membrane; Reticuloendothelial sequestration (e.g. Quinine/quinidine)
- b. Drug-independent antibodies → Drug stimulates antibody production; antibody production against common platelet epitopes; Reticuloendothelial sequestration in absence of continued drug (e.g. Procainamide, gold)
- c. Immune complex → Immune complex formation with drug and circulating antibodies; complement mediated cascade (e.g. Heparin/HIT)

2. Non-immune suppression of platelet production

- a. Direct myelosuppression (e.g. cyclophosphamide)
- b. Alterations in megakaryocyte maturation (e.g. bortezomib)

Establishing a diagnosis

No diagnostic algorithm replaces clinical judgement

1. Clinical Criteria

- a. Thrombocytopenia developed in exposure to a high-risk medication
- b. Extreme platelet nadir (Platelet $< 10 \times 10^9$). Exception being Heparin-induced Thrombocytopenia (Platelet $\sim 20-50 \times 10^9$)
- c. Time to onset of thrombocytopenia $\sim 5-10$ days following exposure
- d. Alternative causes of thrombocytopenia are ruled out

2. Laboratory Criteria

- a. Demonstration of platelet specific antibodies (Not widely available)

- Drugs with a strong association to DITP include vancomycin, septrin, heparin, carbamazepine, Dilantin, valproate, and quinidine. A more extensive **drug list may be found [HERE](#)**

Management

- Discontinue the offending medication
- Extreme thrombocytopenia (Platelet $< 10 \times 10^9$) should receive platelet transfusion
- Benefits of IVIg, PLEX and corticosteroid therapy is not clear

Expected clinical course

- **Clinically significant bleeding is common** and proportional to the degree of thrombocytopenia
- Platelet recovery is typically rapid (1-2 days) following drug discontinuation
- **Do NOT re-challenge** the medication. High rates of recurrence are reported



The Calgary Clinical Pharmacology physician consultation service is available Mon-Fri, 9am-5pm. The on-call physician is listed in ROCA. Click [HERE](#) for clinical issues the CP service can assist with.



The Poison and Drug Information Service ([PADIS](#)) is available 24/7 for questions related to poisonings. Please call 1-800-332-1414, and select option 1