Disorders of the Platelets – 2022

Thrombocytopenia

- Review of normal hemostasis
    - Involves the vascular endothelium, platelets, and coagulation factors
    - Function together to stop hemorrhage and repair vascular injury
    - Disruption in any component may result in bleeding or clotting disorders.

Etiology and Pathophysiology

- Reduction of platelets below 150,000/mcL *
    - Results prolonged or spontaneous bleeding
    - Primarily an acquired disorder
        - Commonly from ingestion of certain drugs (Baby ASA, chemo)
- Causes of Thrombocytopenia
    - Immune thrombocytopenia purpura (ITP)
    - Thrombotic thrombocytopenic purpura (TTP)
    - Heparin-induced thrombocytopenia (HIT)

Immune Thrombocytopenic Purpura (ITP)

- Abnormal destruction of circulating platelets
- Autoimmune disease
    - Platelets coated with antibodies
    - So spleen recognizes as foreign and macrophages destroy them
    - Normal platelet lifespan is 8-10d, with ITP: 1-3d
    - Destruction exceeds production
- Gradual onset with transient remissions

Thrombotic Thrombocytopenic Purpura (TTP)

- Platelets clump in capillaries –> microthrombi
    - Insufficient quantity in circulation
- Autoimmune disease vs. drug toxicities
- Can lead to kidney failure, MI, CVA
- Bleeding and clotting occur simultaneously – **medical emergency!**

Heparin-Induced Thrombocytopenia (HIT)

- Immune-mediated response to heparin
- Can be life-threatening!
- Develops 5 to 10 days after heparin therapy is started
    - Platelet count drops by more than 50%
    - VTE is major clinical problem
        - Arterial thrombosis can also develop
        - VTE and PE often result

Thrombocytopenia

- **Clinical Manifestations**
    - Patients often asymptomatic
    - Most common symptom = mucosal or cutaneous (skin) bleeding
        - Bleeding gums or nosebleeds (epistaxis)
        - Oozing from incisions, injection sites, IVs
        - Petechiae, purpura & ecchymoses
        - Hematuria
        - Melena/hematochezia

- Tachycardia, hypotension, diaphoresis (severe cases!)

- Diagnostic Studies
  - H & P
  - ↓ Platelet count
    - Prolonged bleeding < 50,000/mcL
    - Hemorrhage ↓ 20,000/mcL
  - Morphology
  - Bone Marrow Biopsy

Thrombocytopenia
Interprofessional Care
- Based on cause of the disorder
- Removal or treatment of the underlying cause or disorder may be sufficient
- Avoid aspirin and other medications that affect platelet function or production

Immune Thrombocytopenic Purpura (ITP)
Interprofessional Care
- Corticosteroids
  - Alters spleen's recognition of a "foreign" platelet
    - Suppresses phagocytic response of macrophages
    - Less antibody formation
    - Platelet lives longer, normal life
- Immunosuppressive therapy
- Thrombopoietin injections
  - Increase platelet production
- Splenectomy
  - Indicated if patients do not respond to medical management
  - 2/3 achieve sustained remission

Thrombotic Thrombocytopenic Purpura (TTP)
Interprofessional Care
- Treat underlying disorder/remove cause
- Plasmapheresis
- Corticosteroids
- Immunosuppressive therapy
  - Rituximab, cyclosporine, or cyclophosphamide
- Splenectomy considered
- Platelet administration usually contraindicated

Heparin-Induced Thrombocytopenia (HIT)
Interprofessional Care
- Discontinue all forms of Heparin!
  - Note clearly on medical record
- Different anticoagulant prn
- For severe clotting
  - Plasmapheresis
  - Protamine Sulfate
    - Stop Heparin effect
  - Thrombolytic Agents
    - Destroy clots
  - Surgery
    - Remove clots

Nursing Management
Thrombocytopenia

- Nursing Implementation
  - Detailed head to toe assessment every shift
    - Any bleeding needs evaluation and treatment
  - Educate on injury prevention!
  - If sub-q injections unavoidable, use small-gauge needles use small-gauge needles and application of pressure or ice packs after
  - Avoid IM injections (risk of bleeding)
  - Closely monitor the platelet count, coagulation studies, Hgb, and Hct.
  - Administer platelet transfusions

- Ambulatory and home care
  - Teach injury prevention strategies
  - Avoid NSAIDs or other OTC meds unless cleared by healthcare provider
  - Teach clinical signs and symptoms of bleeding

Thrombocytosis

- Excess circulating platelets
- May lead to clot formation
- Primary
  - Elevated platelet production in bone marrow
- Secondary
  - Due to: Cancer, infection, inflammation, splenectomy, polycythemia vera
- Clinical Manifestations
  - Asymptomatic
  - Clotting
- Diagnostic Studies
  - Plats >400,000 /mcL
  - Bone marrow aspiration
- Collaborative Care
  - Asymptomatic and stable – monitor
  - Treat underlying condition
  - Aspirin to prevent clots
  - Meds to suppress platelet production
  - Plateletpheresis

Clinical Relevance

Top 2 Patient Problems (Nursing Diagnoses) for patient with Thrombocytopenia?

1)

2)

Goal/EO for (1) Patient Problem?

1)

3 Nursing Interventions that will help your patient meet the goal.

1)

2)

3)