RAMA UNIVERSITY

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FACULTY OF NURSING SCIENCES

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PLATELET DEFECTS-
THROMBOCYTOPENI

Learning Objectives

By the end of the class, the students will be able to

- Define idiopathic thrombocytopenia purpura
- Discuss the incidence and etiology
- Identify the types of idiopathic thrombocytopenic purpura
- Explain the pathophysiology
- Discuss the clinical manifestations

Learning Objectives

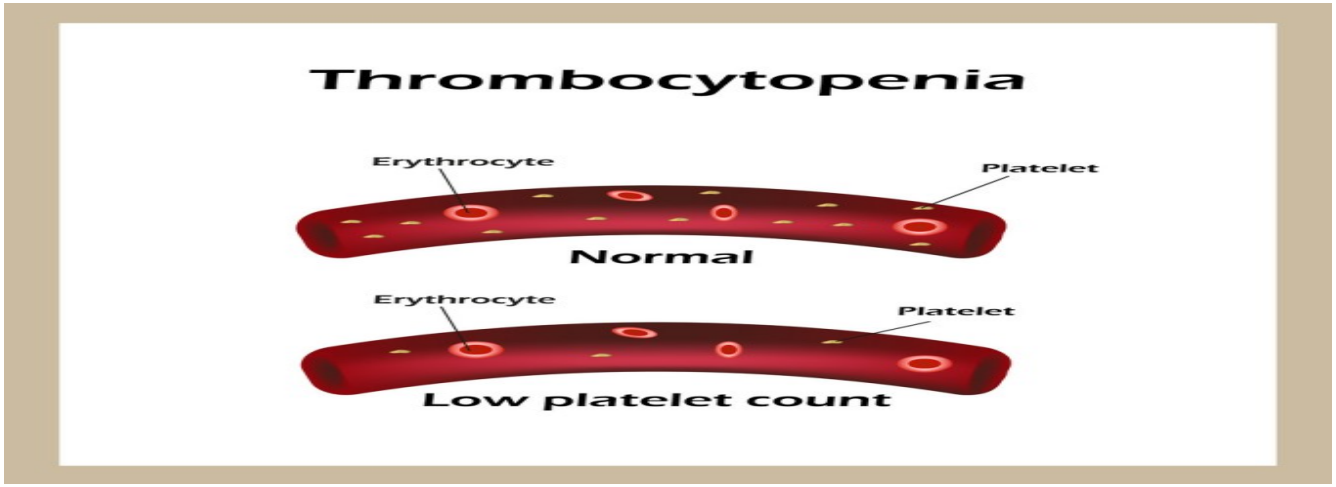
- List out the diagnostic investigations
- Describe the therapeutic management
- Discuss the nursing management
- List out the complications
- Explain the prognosis
- Describe the nursing care of patients with Thrombocytopenia (Thrombocytopenia precautions)

Introduction

- IT is a reduction of platelets below 1,50,000/µl.
- It results in abnormal hemostasis that manifest as prolonged bleeding from minor injury to spontaneous bleeding without injury.

Idiopathic Thrombocytopenic Purpura

Definition: ITP or Immune Thrombocytopenic Purpura, is an acquired bleeding disorder in which the immune system destroys platelets, blood cells that play a pivotal role in primary hemostasis.

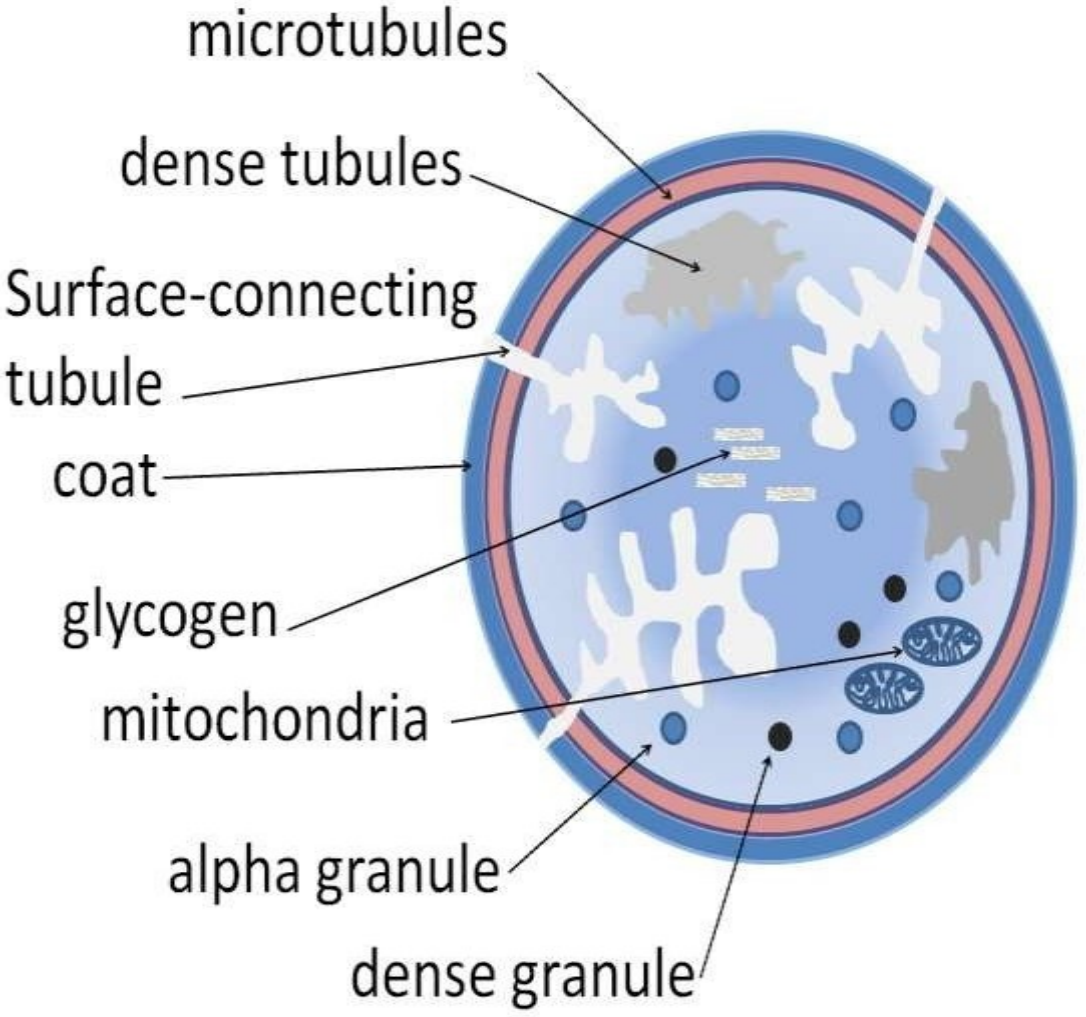


Structure of platelets

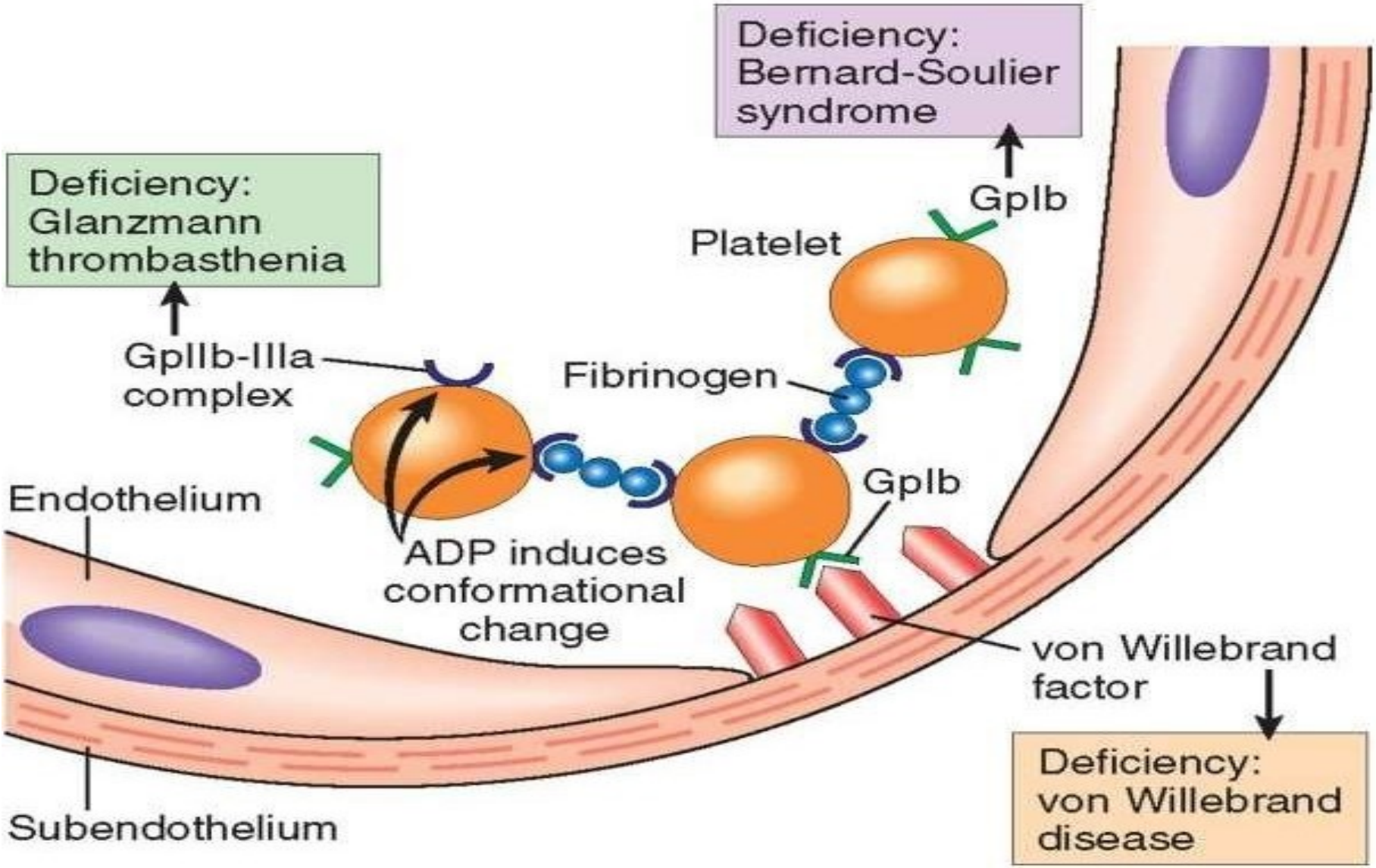
Sol gel zone

Peripheral zone

Organelle zone



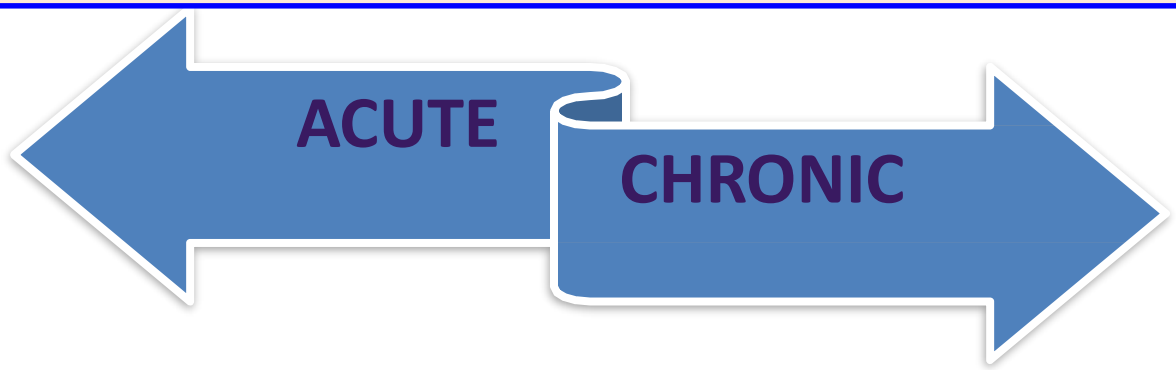
Role of platelets in homeostasis :-



Incidence

- Chronic ITP occurs most commonly in women between 20 and 40 yrs of age.
- Thrombocytopenia (platelet count < 150,000/μl) is common in critically ill Patients.
- The Majority of Adults 20%–40% during the intensive care unit (ICU) stay Thrombocytopenia is recognized as an independent risk factor for mortality in ICU patients

Types of Idiopathic Thrombocytopenic Purpura



- Acute ITP occurs in children following viral infection or vaccination. Sudden onset.

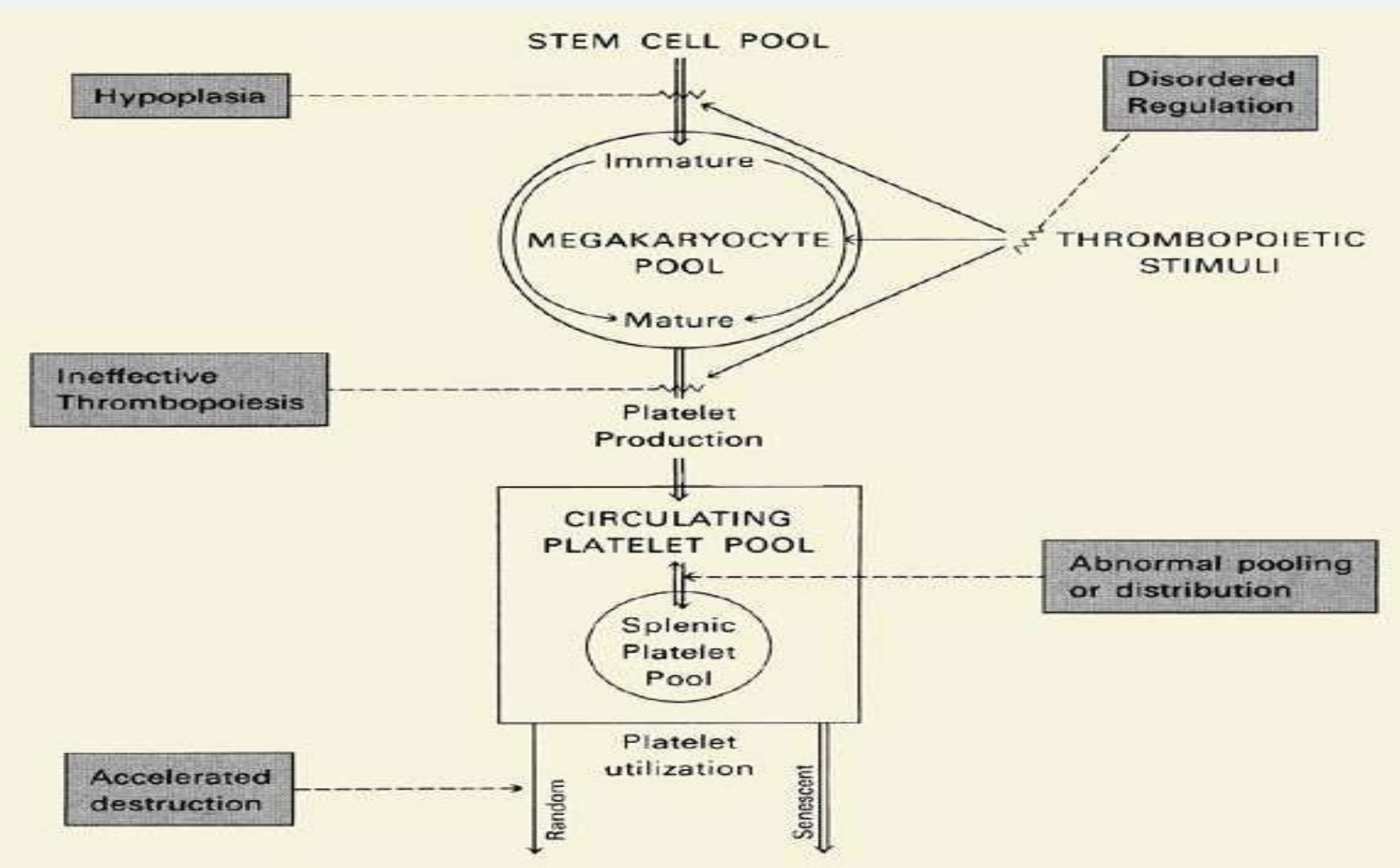
- In acute ITP, immune complexes bind to fc receptor on platelets that leads to immune destruction of platelets by macrophages in spleen.

- Chronic itp occurs predominantly in adult women (20-40 years) and is not preceded by infection or any underlying disease, insidious onset, self limiting.

CAUSES

- Inherited
- Acquired Disorders
  - Autoimmune Disease
  - Increased Platelet Consumption
  - Splenomegaly
  - Bone Marrow Failure
  - Marrow Suppression
  - Ingestion of Certain Drugs , Food And Herbal.

Pathogenesis of Thrombocytopenia



Pathophysiology

- Deficiency of plasma enzyme □ breakdown of zon Willebrand clotting factor(enhances platelet adhesion to damaged endothelial cells).
- Without the enzyme unusually large vWF. Multimeres attach to activated platelets ,thereby promoting platelet aggregation.

Heparin Induced Thrombocytopenia And Thrombosis Syndrome (HIITS)

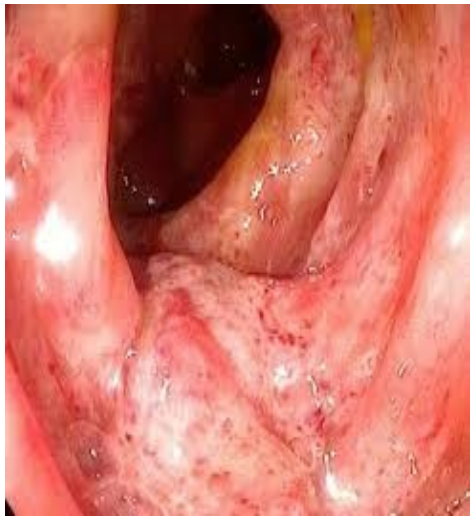
- Increased use of heparin results in the development of life threatening condition called as HITTS. (white syndrome or HIT)
- It can be mild or severe.
- The major clinical problems are venous thrombosis, arterial thrombosis □ DVT, PE.

Clinical Manifestations

- BLEEDING (most common)
- Internal bleeding can also be manifested

Clinical Manifestations

- Mucosal & cutaneous bleeding □ epistaxis, petechiae (small, flat pinpointed red or reddish brown micro hemorrages) purpura (reddish skin bruise), superficial ecchymosis (large purplish lesion caused by haemorrhage).



Clinical Manifestations

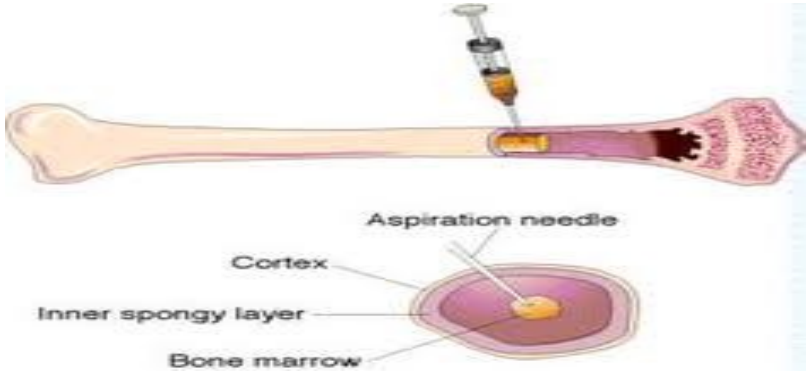
- Weakness
- Fainting
- Dizziness
- Tachycardia
- Abdominal pain
- Hypotension
- Vascular ischemic problems also manifest□ headache, subtle confusion, seizures, coma.

Diagnostic Tests

- Complete Blood Count : Platelet count will be diminished
- Liver function test, Renal function test, Lactic dehydrogenase: to rule out hepatitis, occult malignancy, hemolysis and hemolytic uremic syndrome.
- Chest X-Ray

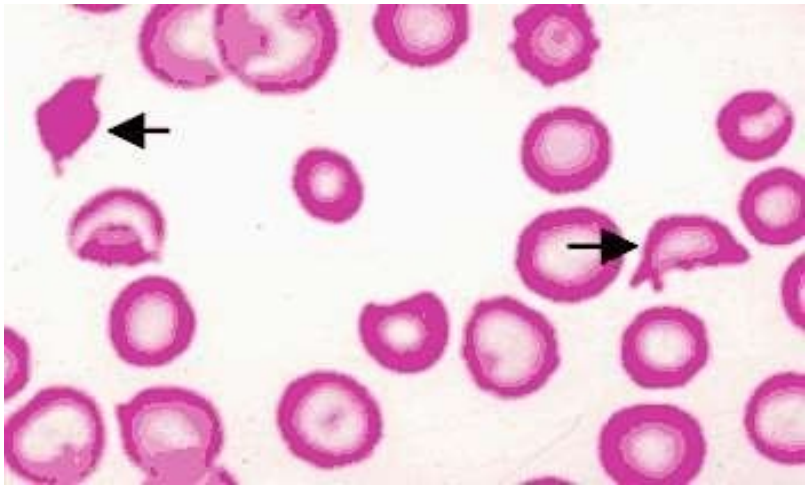
Diagnostic Tests

- ☐ Blood culture
- ☐ Test for malaria or dengue serology
- ☐ Screening test for disseminated intravascular coagulopathy: if sepsis is suspected.
- ☐ Bone marrow aspiration



Diagnostic Studies

- PLATELETS < 150,000/µl □ thrombocytopenia
- < 20,000/µl □ life threatening bleeding
- PT and a PPT remains normal
- Specific assay – ITP positive antigen specific assay.
- Peripheral blood smear



Management

Goal : safe platelet count

Drugs :

- Immunosuppressive agents – it may reduce the platelet destruction .
- Prednisone – 1 mg / kg
- Cyclophosphamide and Azathioprine
- Dexamethazone
- Intravenous immunoglobulin – 1gm / kg for 2 days . It helps to bind the receptors on the macrophages .

Platelet Transfusion

Management - ITP

- Corticosteroids
- Platelets Transfusion
- Spleenectomy
- IV Immunoglobulins
- Anti Rho
- Immunosuppresives (cyclosporin azothioprine)
- High dose cyclophosphamides or combination chemotherapy

Management - HITTS

- Direct thrombin inhibitor (argatroban)
- Indirect thrombin inhibitor (fondaparinux)
- Protamine sulphate
- Coudamine
- Thrombolytic agent

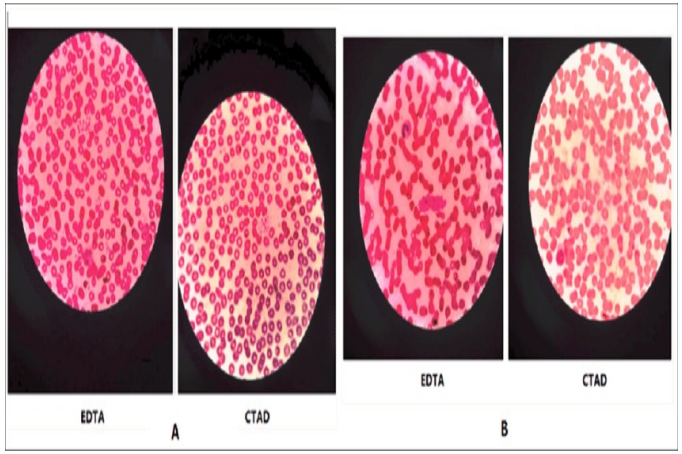
Management For Decreased Platelet Production

- Identification and treatment of cause
- Corticosteroids
- Platelets transfusion
- Oprelvekin (neumega)

Thrombotic Thrombocytopenic Purpura

It is on uncommon syndrome characterized by hemolytic anemia, thrombocytopenia, neurological abnormalities, fever, and renal abnormalities .

Cause : Platelet Agglutination



Pathophysiology

Platelet Agglutination

Forms Micro Thrombi

Deposits in arterioles and capillaries

Clinical Manifestations

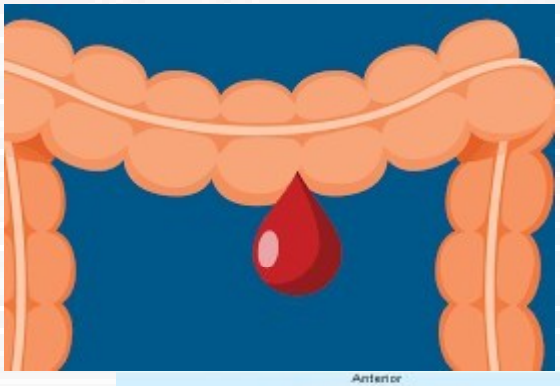
Clinical Manifestations

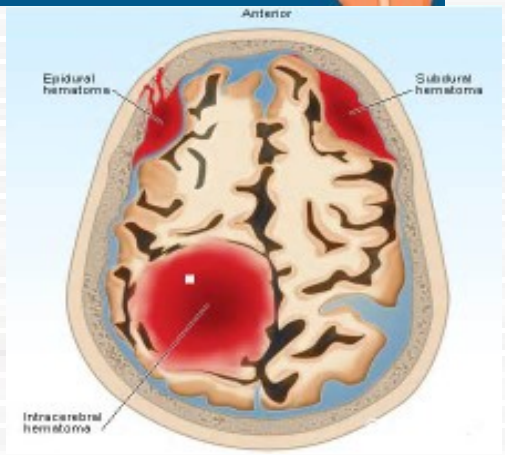
- Fever
- Anemia
- Nausea
- Anorexia
- Weakness
- Petechiae
- Hematuria
- Organ involvement

Complications

Complications of thrombocytopenia

- Intracranial hemorrhage.
- GI bleeding.
- Epistaxis.
- Menorrhagia.
- Gingivorrhagia.





Diagnostic Evaluation

- ☐ Low platelet count and red cell fragmentation
- ☐ Hb level
- ☐ Platelet count
- ☐ LDH
- ☐ BUN
- ☐ Fibrin degradation test

Treatment

- FFP
- Corticosteroids
- Plasma exchange or plasmapheresis
- Vincristine
- Cyclosporine
- Immunoglobulin therapy
- Splenectomy

Nursing Diagnosis

- Acute pain related to bleeding into tissues
- Impaired oral mucous membrane related to low platelet count, treatment .
- Impaired skin integrity related to bleeding, ischemia .
- Decreased cardiac output related to fluid volume deficit and hypotension
- Risk for injury related to low platelet count.
- Risk for complications like fluid volume deficit loss of blood .

Cont…

- Risk for complications like fluid volume excess related to blood transfusion, or internal bleeding.
- Risk for complication like diminished tissue perfusion related to micro thrombi.
- Anxiety related disease condition.
- Ineffective therapeutic regimen management related to lack of knowledge about treatment.

Nursing care of the patient with Thrombocytopenia

Thrombocytopenia : Platelet count below 1,00,000/ mm3

- Test pt for bleeding in stool and urine
- Avoid punctures for IV or IM
- Handle pt gently. Use electric razor
- Avoid placing foley or rectal thermometers
- Avoid oral trauma with soft bristle brushes, avoid flossing, avoid hard candy
- Watch for intracranial bleeds: Altered LOC, pupil changes
- Stool softeners to avoid straining

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THANK
YOU!