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BLOOD DISORDERS

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INTRODUCTION

- Blood is the life-maintaining fluid that circulates through the body's heart, arteries, veins, and capillaries.
- Formation of blood prenatally, takes place in wall of yolk sac; later in liver & spleen ;5th month onwards red bone marrow.



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Functions Of Blood

- **Transportation**
 - Oxygen and Carbon dioxide between the lungs and rest of the body.
 - Nutrients from digestive tract and storage sites to rest of the body.
 - Hormones from glands to their target cells.
- **Protection**
 - WBCs in blood destroy microorganisms.
 - Platelets initiate blood clotting and thus minimize blood loss.



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- **Regulation**
 - Ph by interacting with acids and bases.
 - Water balance by transferring water to and from the tissues.



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Components of blood

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- **Red blood cells** (erythrocytes)- carry oxygen to and carbon-dioxide from the tissues.
- **White blood cells** (leukocytes) - help to fight infection and aid in the immune process.
- **Platelets** (thrombocytes)- help the blood to clot
- **Plasma** - helps to maintain blood pressure; provides proteins for blood clotting; balances the level of sodium and potassium.



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DISORDERS OF BLOOD

- Blood disorders can affect any of the three components of blood i.e RBCs, WBCs and platelets.
- RBCs- anemia, polycythemia
- WBCs- leukopenia, leukemia
- Platelets-thrombocytopenia, thrombocytosis



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Anemia

▶ **Defined** as a decrease in the amount of red blood cells, hemoglobin in the blood or decreased ability of the cells to carry oxygen.

▶ **Types of anemia-**

- 1. Iron deficiency anemia-**occurs when the rate of loss of iron is more than its rate of absorption which may be because of chronic blood loss, increased use of iron (pregnancy, children), decreased absorption of iron.
- 2. Aplastic anemia-**occurs when body's bone marrow doesn't make enough new RBCs which may be because of damage to bone marrow and blood stem cells.



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- 3. Thalesaemia-** disorder which cause the body to make fewer healthy RBCs and less hemoglobin because of lack of protein chains.

- 4. Sickle cell anemia-**disease in which body makes sickle shaped RBCs. These sickle cells contain abnormal hemoglobin and don't last very long(10-20 days).

- 5. Pernicious anemia-**condition in which body cannot make enough healthy RBCs because of lack of vitamin B12.



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6. Haemolytic anemia-occurs when RBCs are destroyed and removed from the blood stream before their normal lifespan is up.



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- **Symptoms –**
- Pale skin
- Dizziness
- Easy fatigue and loss of energy
- Leg cramps
- Unusually rapid heart beat
- Shortness of breath
- Headache
- Difficulty in concentration
- Tachycardia
- Palpitations



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- **Oral manifestation-**
- Generalized stomatitis
- Angular cheilitis
- Gingivitis
- Pallor of lips and oral mucosa
- A smooth, red painful tongue
- Burning sensation of tongue
- Atrophy of filiform papillae and later fungiform papillae
- Disturbed taste sensation
- Candidial infections
- Plummer- Vinson syndrome



Angular cheilitis

Red and smooth tongue





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Dental considerations

- Periodontal procedures not recommended.
- Intra muscular injection & nerve block anaesthesia avoided because of risk of haemorrhage.
- Intraligamentary anaesthesia can be used safely.



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Treatment for anemia

- Treatment of the causative disease
- Vitamin and mineral supplements
- Change in diet
- Blood transfusion
- Bone marrow transplant
- Surgery (to remove the spleen, if related to hemolytic anemia)
- Antibiotics (if an infection is the causative agent)



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Polycythemia

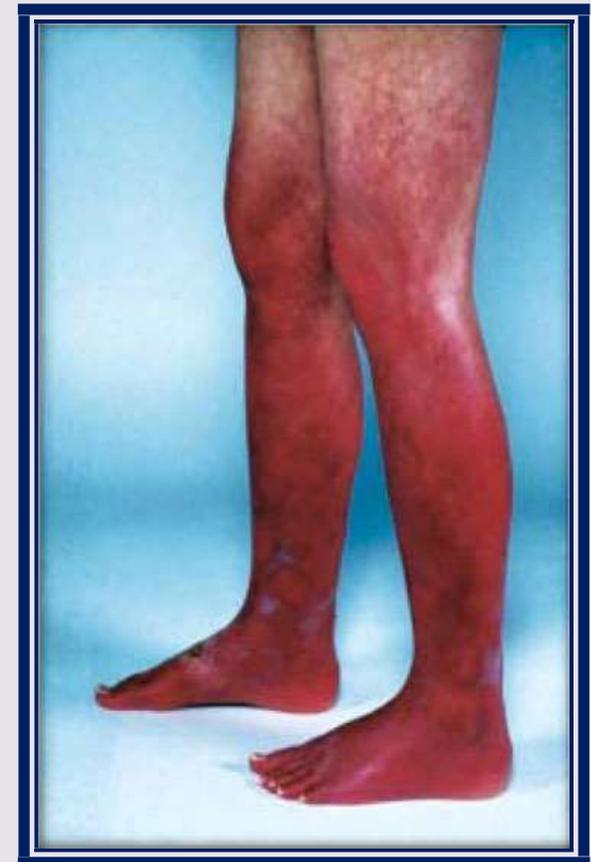
- Defined as abnormal increase in the number of RBCs in the peripheral blood, with an increased hemoglobin level
- **Causes –**
 - ↓ **Primary** and **Secondary**
 - increase in production of RBCs due to increased proliferative activity of bone marrow
 - absolute increase in RBC mass due to enhanced stimulation of RBC production



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- **Symptoms**
 - Tender redness of palms and soles
 - Itching
 - Joint pains
 - Abdominal pain
 - Bruising
 - Bleeding from nose
 - Bluish color of the skin





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- **Oral manifestations**
 - Purplish or red areas on the cheeks, gums, lips, oral mucosa and tongue.
 - Gingiva is engorged and swollen
 - Spontaneous bleeding of the gingiva
 - Submucosal petechiae, echymosis and hematoma

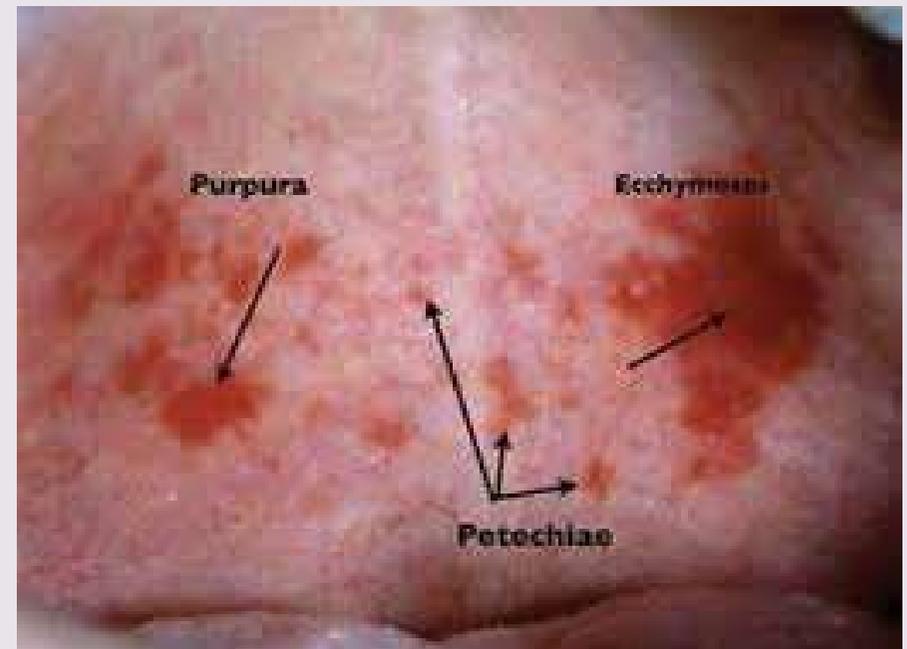
Purplish/red area on tongue





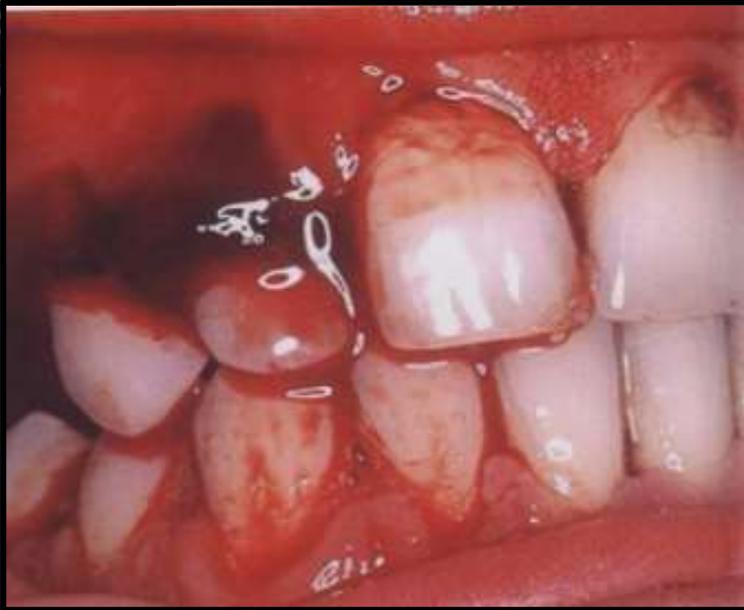
Engorged and swollen gingiva

Submucosal petechiae and
echymosis





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Gingival bleeding



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Dental consideration

- Dental treatment presents a risk because of possibility of bleeding/ thrombosis.
- Pre operative myelosuppressive treatment



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Disorders of platelets

- ▶ Platelets help in healing of wound and prevent bleeding by forming blood clots.
- ▶ Normal range- 1,50,000-4,50,000 platelets per micro liter of circulating blood.
- ▶ Disorders of platelets are- thrombocytopenia and thrombocytosis



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Thrombocytopenia

Decrease in the number of circulating blood platelets

Causes –

- Pregnancy
- Autoimmune disease (Immune thrombocytopenia)
- Bacteria infection
- Viruses (chicken pox, mumps, rubella)
- Anemia (aplastic anemia)
- Medications



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- **Symptoms**
 - Ease of excessive bleeding(purpura)
 - Petechiae
 - Prolonged bleeding from cuts
 - Occasional bleeding from the gums, digestive tract, urinary tract
 - Bleeding from nose(epitaxis)



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- **Oral manifestation**
 - Spontaneous gingival bleeding
 - Edematous enlargement of gingiva
 - Hyperaemia of gingiva
 - Petechiae and echymosis on soft palate and buccal mucosa



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Dental consideration

- Drug such as Aspirin should be avoided
- Platelet transfusions are best during major surgeries



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Treatment

- No specific treatment of the disease
- Splenectomy may be beneficial
- Bed rest & blood transfusions