

WHITE BLOOD CELL DISORDERS

- CLASSIFICATION

1. QUANTITATIVE DISORDERS

- Decrease in number

1. Granulocytopenia

2. Neutopenia- cyclic neutropenia, primary splenic neutropenia, familial neutropenia

- Increase in number

1. Granulocytosis

2. Neutrophilia

3. Basophilic leukocytosis

4. Monocytosis

2 QUALITATIVE DISORDER

- 1 lazy leukocyte syndrome

- 2 chediak higashi syndrome

- 3 multiple myeloma

AGRANULOCYTOPENIA

(granulocytopenia, agranulocytic angina)

- It is characterized by marked leukopenia with reduction and absence of neutrophilic leukocytes
- TYPES-
 - 1 primary agranulocytosis
 - 2 secondary agranulocytosis
 - 3 mild neutropenia
 - 4 moderate neutropenia
 - 5 severe neutropenia
 - 6 agranulocytosis
- CAUSES
 1. Idiosyncrasy
 2. Deficiency of vitamin B12
 3. Infections like hepatitis , varicella zoster infection etc
 4. Diseases like SLE, pancytopenia
 5. Hemodialysis

CLINICAL FEATURES

- Any age and more common in adults
- Sore throat , high fever pale skin
- Jaundice
- Rapid advencing necrotic ulceration of throat and mouth
- Lesions are ragged, necrotic and covered with a gray black membrane
- Halitosis
- Loss of decidous and permenent teeth

R / F

- Rapid loss of alveolar bone
- Infection spreads deep to bone causing osteomyelitis

LAB FINDINGS

- Wbc count less than 2000 / cu mm and granulocyte below 200 cell / cu mm

MANAGEMENT

- Removal of causative agent
- Blood transfusion
- Antibiotics, antibacterial mouthwash , topical anaesthetic solution

CYCLIC NEUTROPENIA (periodic neutropenia)

- It is a rare disorder characterized by periodic or cyclic diminution in circulating neutrophils due to failure of stem cells of bone
- **CLINICAL FEATURES**
- Present in infancy , affects both sexes equally
- Neutropenic episodes occur in 2- 4 weeks and last for 4- 5 days
- Fever, soar thraot, stomatits, regional lymphadenopathhy



Mucosal ulceration and periodontitis



Ulcer on labial mucosa

CLINICAL FEATURES

- Headache, arthritis, cutaneous infection and conjunctivitis
- Severe gingivitis and painful ragged ulcers on lip tongue, palate gingiva and buccal mucosa

R/F

- Mild or severe bone loss leading to periodontitis
- In children called pre pubertal periodontitis

LAB FINDINGS

- Decrease in neutrophils during the neutropenic episodes , at the peak of the disease the neutrophils disappear for 1 or 2 days

MANAGEMENT

- Monitoring for infection during the neutropenic period
- Corticosteroids
- Maintenance of oral hygiene

NEUTROPHILIA

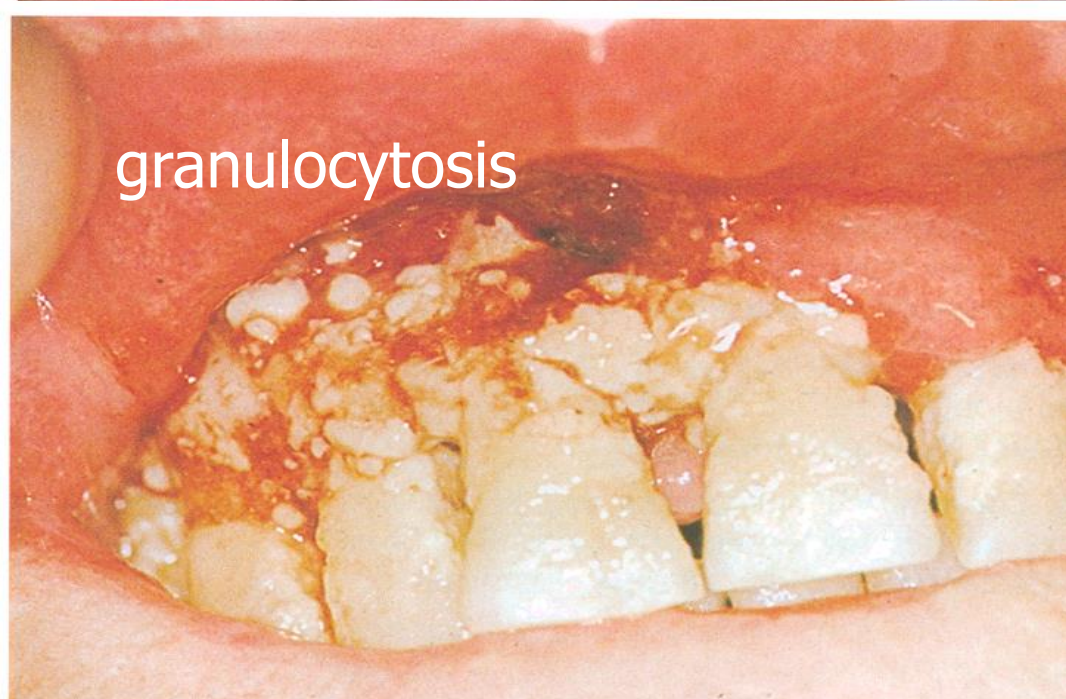
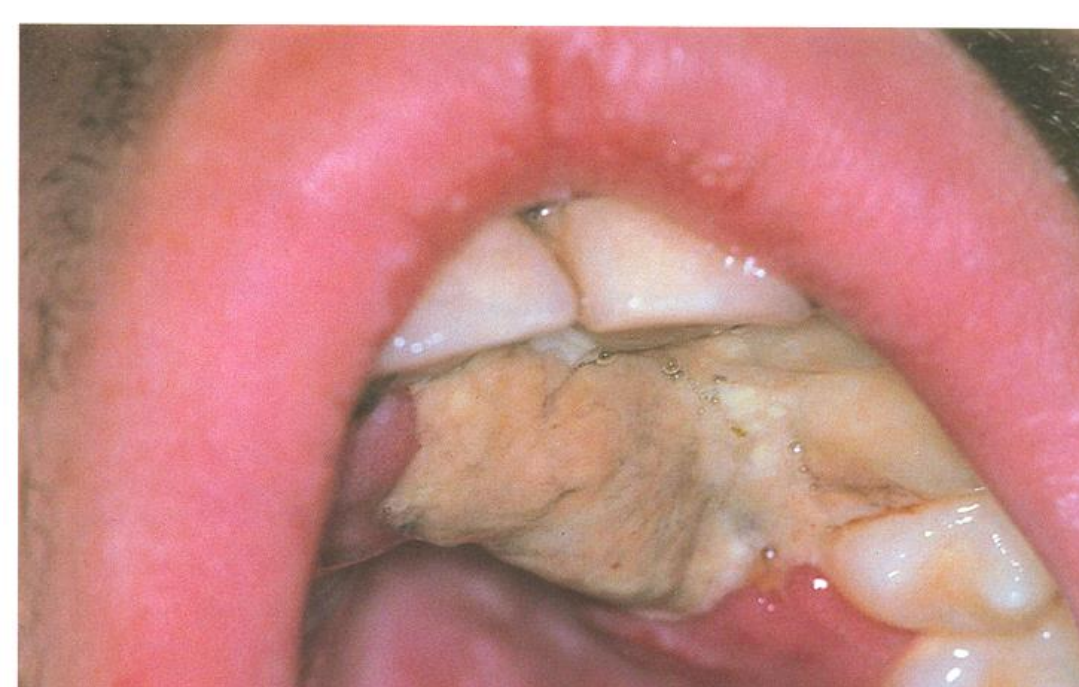
- Characterised by increase in blood neutrophil concentration
- Seen in acute and chronic infection

GRANULOCYTOSIS

- Increase in granulocytes seen in patient with chronic infection, hodgkin disease, polycythemia vera..

EOSINOPHILIA.

- Increase in no. of eosinophilic leukocytes.
- Seen in allergic reactions, skin diseases, leukemia.



MONOCYTOSIS

- Seen in bacterial infection, protozoal infection, lymphoma and carcinoma.

CHEDIAK-HIGASHI SYNDROM

- A congenital autosomal recessive defect of granulocyte, abnormal granule seen which result in decreased chemotactic and bactericidal activity.
- C/F
- Albinism, photophobia, respiratory infection, neurological and git infection, ulceration of oral mucosa and gingivitis

INFECTIOUS MONONUCLOSIS

- Also called glandular fever and kissing disease
- Caused by EBV which infects beta lymphocyte.
- C/F
- Affects children and young adults.
- Anterior and posterior cervical lymphnode enlarge
- Sore throat fever, headache, diarrhea, vomiting and erythrematous macular rash
- Tiny petechie on soft palate and labial and buccal mucosa, acute gingivitis and stomatitis, inflamed and enlarged tonsils, dysphagia

LAB FINDINGS

- Increase in mononuclear cells with pleomorphism and kidney shape nucleus
- Increase in wbc count
- **Management**
- Antiviral drugs, corticosteroids and topical anesthetic solution

LEUKEMIA

- It is a neoplastic proliferation of wbc in bone marrow usually in blood and sometime in liver, spleen and bone marrow

CLASSIFICATION

1. Acute lymphoblastic leukemia
 - L1-acute lymphoblastic[children]
 - L2-acute lymphoblastic[adult]
 - L3-burkitt's
2. Acute myeloid leukemia
 - M1-myeloblastic[without maturation]
 - M2-myeloblastic[with maturation]

- M3-promyelocytic
- M4-myelomonocytic
- M5- monocytic
- M6-erythroleukemia
- M7-megakaryocytic

3. CHRONIC

- Chronic lymphocytic leukemia
- Chronic myeloid leukemia

ETIOLOGY

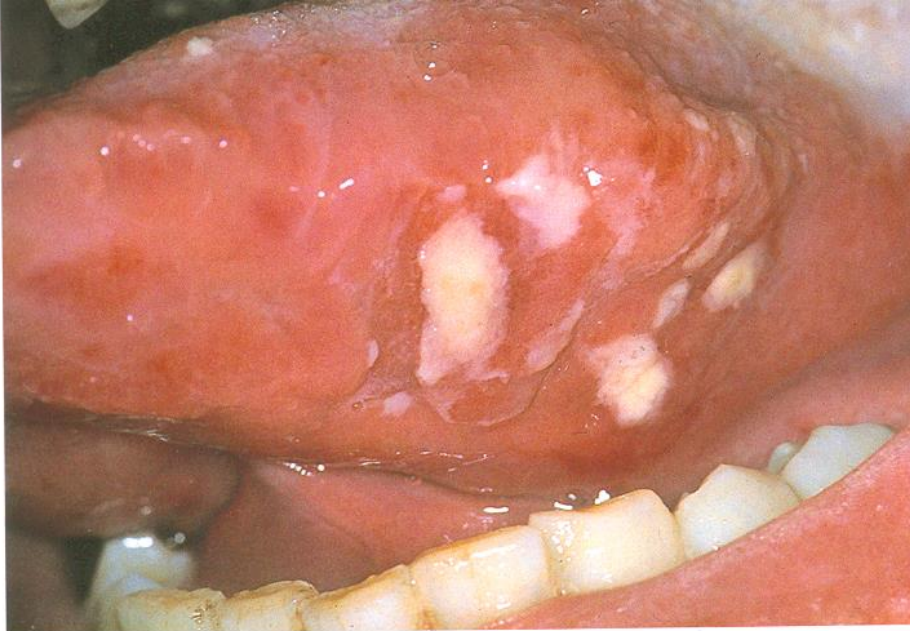
- EBV
- Radiation and atomic energy
- Chemical agents-aniline dyes
- Anti cancer drugs
- Genetic and chromosomal factors-Philadelphia chromosome
- Immunological deficiency

ACUTE LEUKEMIA

- It is a disorder in which there is a failure of maturation of leukocytes
- Block in differentiation of leukemic stem cells and blast cells so failure of maturation

C/F

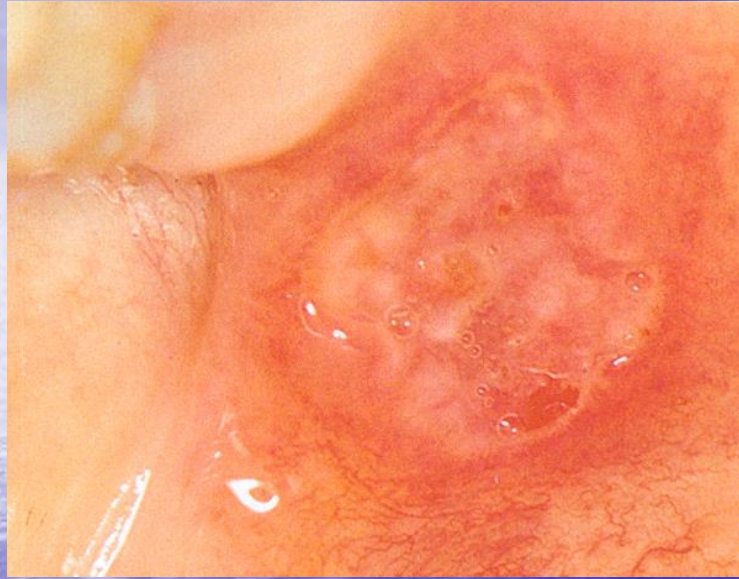
- ALL is most common in children, AML common in adults
- Weakness , fatigue, weight loss, fever, chills, headache
- Pallor in mucus membrane and skin,bleeding, bone tenderness and pain.



AML ulcer
on tongue



AML ulcer
on lips



ALL
ulcer on
lips



ACUTE
MYELOMO
NOCYTIC
LEUKEMIA

- Oral lesions are common in AML.
- Petechia , ecchymosis, gingival haemorrhages, necrosis,ulceration of oral mucosa.
- Loosening of teeth, delayed wound healing, submandibular and cervical lymphnode enlargememnts
- Hepatosplenomagaly

LAB FINDINGS

- WBC count vary - $>10^6$ to as high as $5000*10^6$
- Normochromic anemia,thrombocytopenia and decrease in normally functioning neutrophils

MANAGEMENT

PHASE OF INDUCTION

- Vincristine, L-asparaginase and prednisone

PHASE OF CONSOLIDATION

- Daunorubicine, mercaptopurine, cytarabine and methotrexate
- Allogenic bone marrow transplantation
- Topical treatment to stop gingival bleeding, absorbable gelatin or thrombin

CHRONIC LEUKEMIA

- Characterized by presence of large leukemic cells and differentiated WBC in the bone marrow, peripheral blood and other tissues,
- It is associated the presence of chromosomal abnormality – philadelphia chromosome

CLINICAL FEATURES

- affect middle aged persons & men more commonly
- Onset and course are insidious
- Chronic malaise, fatigue ,weight loss , nightsweat , lymphadenopathy , splenomegaly ,hepatomegaly
- Low grade fever and enlargement of parotids
- Ecchymoses, petechiae, superficial ulcerations, nodules,papules



CLL ulcer on
palate



CLL multiple ulcer on
lips



CLL marked gingival
enlargement

- Nodules, pruritus, dark discoloration of skin,
- Pallor of oral mucosa, bleeding from gums

LAB FINDINGS

- PBS –immature leukocytes
- Increase in WBC count

MANAGEMENT

Chemotherapy and bone marrow transplantation

Radiotherapy and steroids