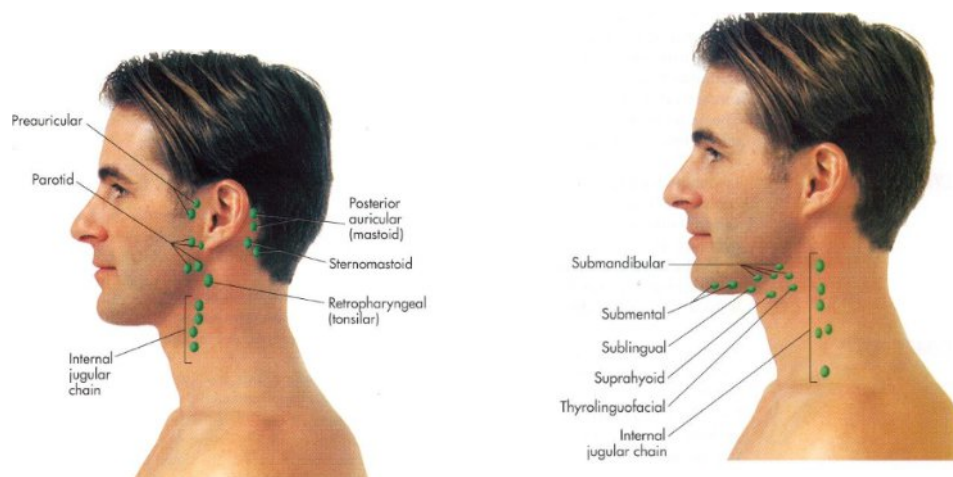


## Advanced Assessment in Clinical Practice: Lymphatic System

- I. Lymphatic system assessment
  - A. Lymph nodes are located in chains throughout the body. Produce lymphocytes along with the tonsils, spleen, and bone marrow.
  - B. Spleen is the major area where damaged cells are removed from the body.
  - C. Thymus gland is active in children and shrinks in adulthood. Makes B lymphocytes which become plasma cells in adulthood.
  - D. Tonsils and adenoids become enlarged with an infectious process.
  - E. Lymphatic drainage
    1. Right upper side of the body drains into the right subclavian vein.
    2. Thoracic area drains into the left subclavian vein.
  - F. Lymph node assessment
    1. Enlarged nodes
    2. Tender nodes
    3. Malignant lymph nodes
      - Nontender
      - Tiny to very large
      - Tend to be harder than expected
      - Usually only on one side
    4. Enlarged nodes common in children

5. Ear infection will generally have enlargement of the pre-auricular, parotid and internal jugular nodes.
6. Throat infection will generally have enlargement of the submandibular, submental, and internal jugular nodes.



7. Peritonsillar abscess can develop especially with beta hemolytic strep infections.

## II. Abnormalities of the lymphatic system

- A. Lymphangitis: Inflammation of one or more lymph vessels. Lymphangitis affects the connective tissue under your skin. Repeated infections can cause scarring that makes the tissue vulnerable to more swelling and infection.
- B. Lymphedema: Build up of lymphatic fluid into the soft tissues of the body, usually an arm or leg. If the lymphatic vessels or nodes become damaged or are missing, the lymph fluid cannot move freely through the system. The fluids can then build up and cause swelling in the affected arms or legs.
  1. Inherited (Primary): Lymph nodes and vessels are absent at birth. Swelling usually appears during adolescence and affects the foot or calf.
  2. Acquired (Secondary): An injury to the lymphatic system causes the swelling.

- C. Hodgkin's lymphoma: Type of malignant B cell lymphoma characterized by the orderly spread of disease from one lymph node group to another usually beginning in the cervical or supraclavicular area. Systemic symptoms develop with advanced disease. Primarily affects those between 15 and 30 years and those older than age 55.
1. B symptoms are found in 40% of patients and include fever, malaise, night sweats, weight loss, and puritis.
  2. Lymphadenopathy occurs in several areas especially in the cervical region.
  3. Other symptoms include cough, dyspnea, dysphagia, left upper quadrant pain, jaundice, ascites, and genitourinary dysfunction.
- D. Non-Hodgkin's lymphoma: Cancer of the cells of the lymphatic system which can start almost anywhere in the body. It may occur in a single lymph node or a group of lymph nodes. The lymphoma can spread to almost any part of the body including the liver, bone marrow, and spleen. Over time, the lymphoma cells replace the normal cells in the bone marrow. Signs and symptoms similar to Hodgkin's along with diagnostics, however, Reed-Sternberg cells will not be present. Treatment options also similar, however, the disease has a poor prognosis depending on histologic type and progression.
1. Only 20% have the B symptoms of fever, malaise, night sweats, weight loss, and puritis.
  2. Other symptoms include cough, dyspnea, chest pain, right upper quadrant pain and liver enlargement.

Lab effects: Hodgkin's lymphoma + sed rate, ↑ protein and albumin + Reed Sternberg cells in lymph nodes ↑ ALP could indicate liver or bone metastasis
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E. Leukemia: Crowding of the bone marrow due to overproduction of immature white blood cells.

1. Leukemia can be acute or chronic. Both chronic types of leukemia are seen more in adults. Leukemia may be lymphocytic or myelocytic.

Lab effects: Leukemia  
 ↑ WBC, ↓ RBC, ↓ platelets  
 Blast cells indicate acute leukemia or chronic which has gone into an acute phase

2. Assessment

Acute

- Sudden onset of symptoms
  - High fever
  - Bleeding
  - Infection
  - Hepatosplenomegaly
  - Lymphadenopathy

Acute and chronic

- Vague complaints
  - Fatigue, malaise
  - Petechiae
  - Night sweats
  - Bone or joint pain
  - Weight loss

- Chronic will have milder symptoms. May be asymptomatic at the time of diagnosis.
- May also see priapism

3. AML in adults. “The **Men**”
4. ALL in kids. “The **little** guys”
5. CML may only live two years. “They are **Made** for heaven”
6. CLL will **Live Longer**. Seen more in adults