



Disorders of Lymphatic System

Prof. Dr. Azza AbdelAziz Ali

azza3a@mans.edu.eg azza3a@yahoo.com

Learning Outcomes

By the end of the lecture, you will be able to:

- Enumerate different lesions of lymph vessels
- Define lymphadenopathy and list causes
- Define splenomegaly and list causes

Agenda

- Diseases of lymph vessels;
- Diseases of lymph nodes;
- Diseases of spleen;

Diseases of Lymph Vessels

- Acute lymphangitis
- Erysipelas
- Chronic lymphangitis
- Hamartomas
- Tumors

Diseases of Lymph Vessels

Acute lymphangitis:

Def: acute inflammation of lymphatic vessels and the perilymphatic blood vessels.

It is due to streptococcus pyogenes infection

Complications: Chronic lymphangitis

Erysipelas:

Def: Spreading acute lymphangitis of dermis usually of the face due to streptococcus pyogenes infection

Pathology:

- The area is raised, painful, red with well defined margin and indurated; and Spreads rapidly
- Cervical lymphadenitis

Course: Disease lasts 1-3 weeks and heals with no disfigurement



Diseases of Lymph Vessels

Chronic lymphangitis:

Non specific: Following acute lymphangitis

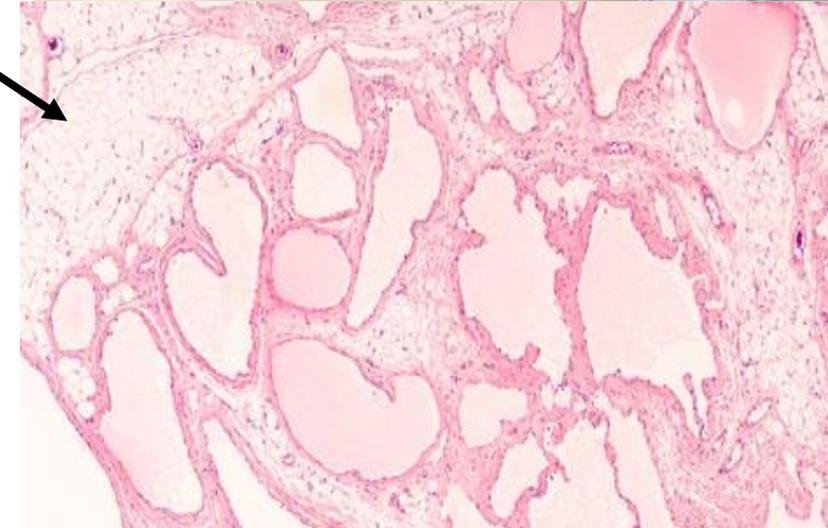
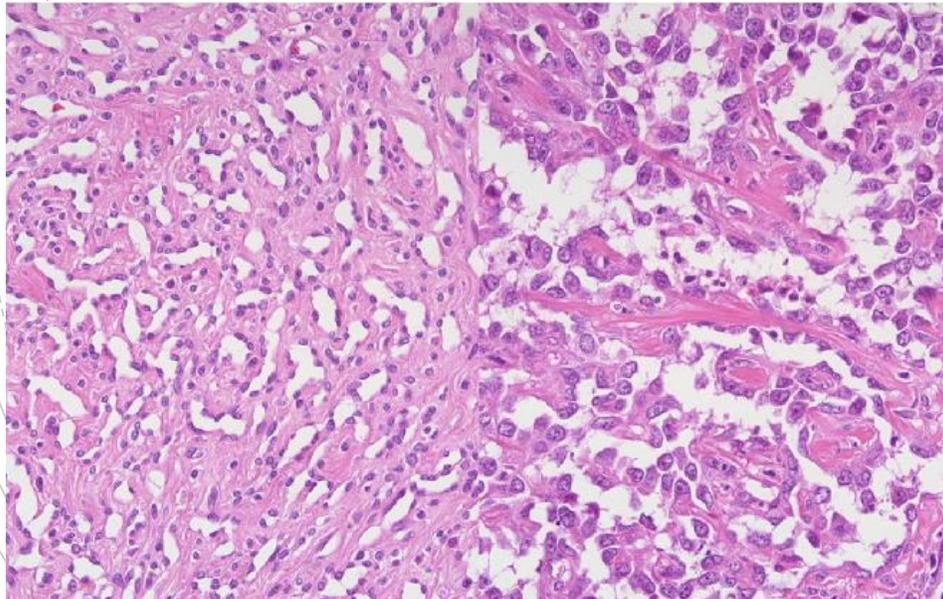
Specific: T.B, \$, Filariasis.

Hamartomas: * Lymphangioma

Tumors

Malignant

Lymphangiosarcoma



Diseases of Lymph Nodes (Lymphadenopathy), causes

Def., Lymphadenopathy means Lymph node enlargement
Causes

Non neoplastic

- Acute lymphadenitis
- Chronic lymphadenitis
- Hyperplastic lymphadenopathy

Neoplastic

- Lymphomas: either
 - ✓ Hodgkin's lymphoma
 - ✓ Non Hodgkin's lymphoma
- Langerhan's cells histiocytosis
- Seconderies: either from
 - ✓ Carcinomatous
 - ✓ Sarcomatous

Diseases of Lymph Nodes

Acute Lymphadenitis

A- Bacterial: as in an acute bacterial infection (usually pyogenic mainly face and hand)

N/E: The Lymph nodes are discrete enlarged and soft. c/s bulges out and is pink grey.

M/E: L.N show large germinal centers containing numerous mitotic figures, sometimes a neutrophilic infiltrate & necrosis resulting in the formation of an abscess.

Clinically: LNs are discrete, enlarged, soft, painful and tender.

Complications: Acute suppurative lymphadenitis
Chronic non specific lymphadenitis

B- Viral: as in glandular fever which is presented by fever, sore throat, enlarged cervical lymph nodes. Some cases misdiagnosed as lymphoma



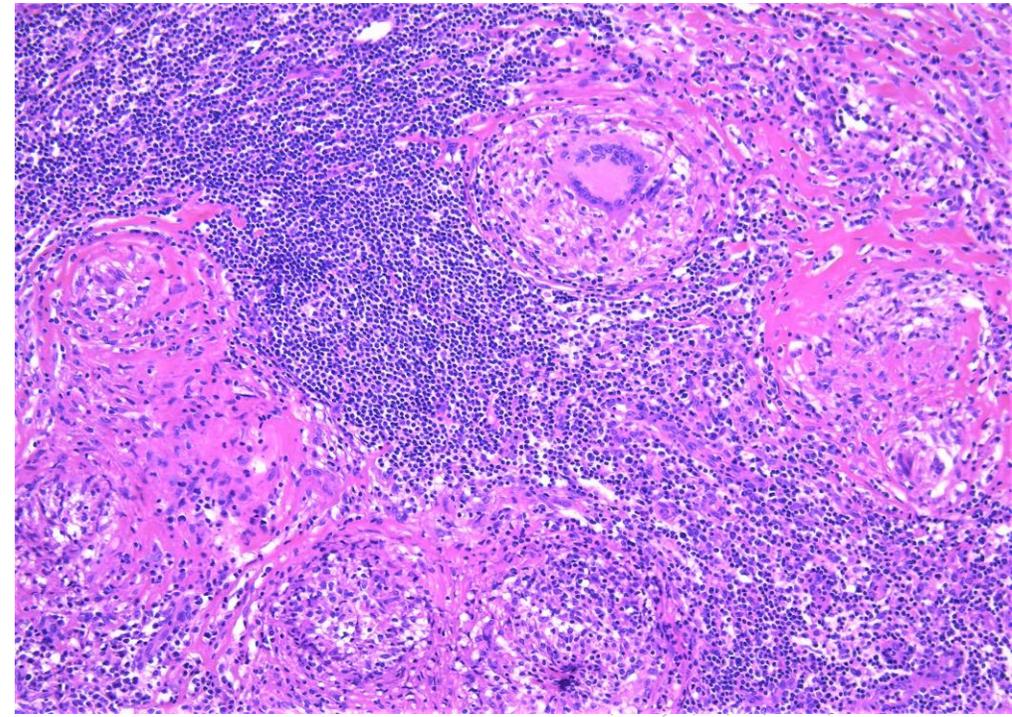
Diseases of Lymph Nodes

Chronic Lymphadenitis

Chronic non specific lymphadenitis: Occurs in lymph nodes draining foci of chronic non specific inflammation.

N/E: Affected nodes are matted, moderately enlarged and firm. C/S has a red tinge and is homogenous. It heals by fibrosis.

Chronic specific (granulomatous) lymphadenitis as infective granulomas TB



Diseases of Lymph Nodes

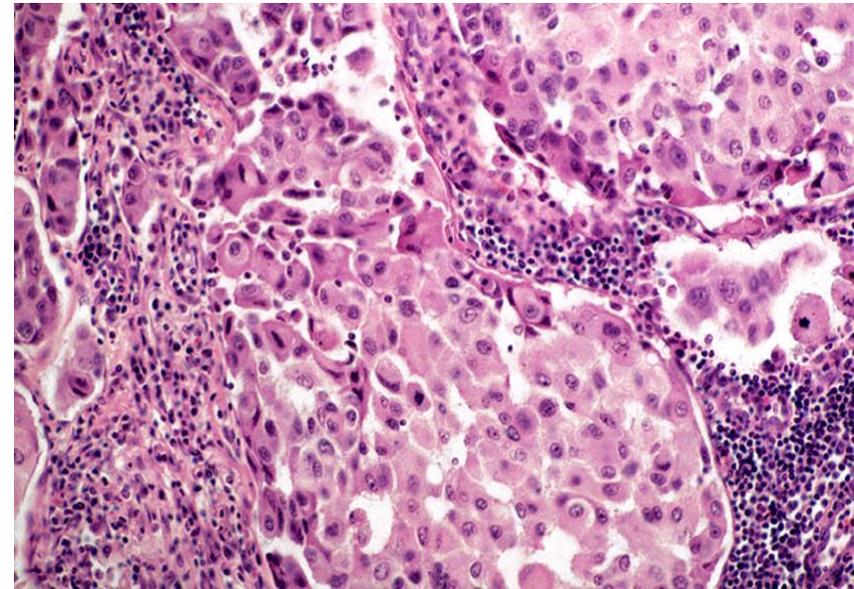
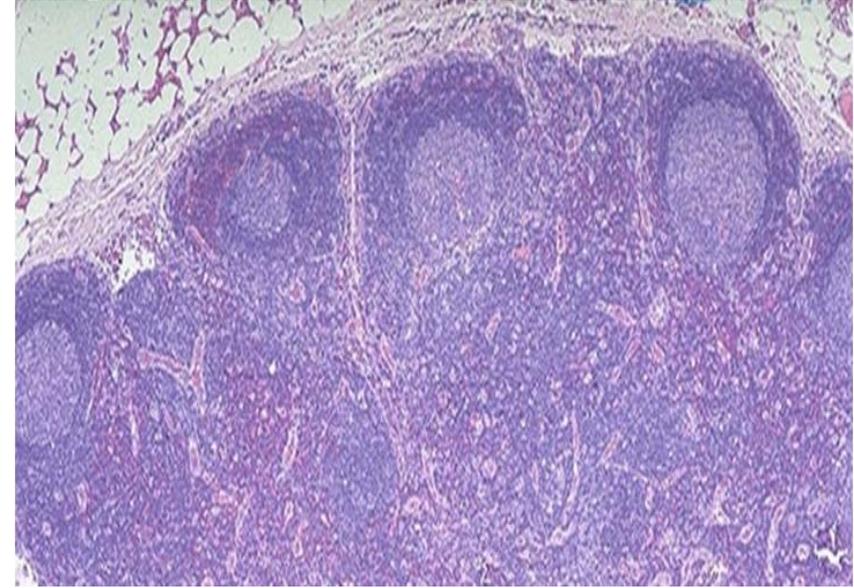
Hyperplastic lymphadenopathy

Follicular hyperplasia:

- Nodal architecture is preserved
- There is an increase in the number and size of follicles, which show variation in shape.

Sinus histiocytosis:

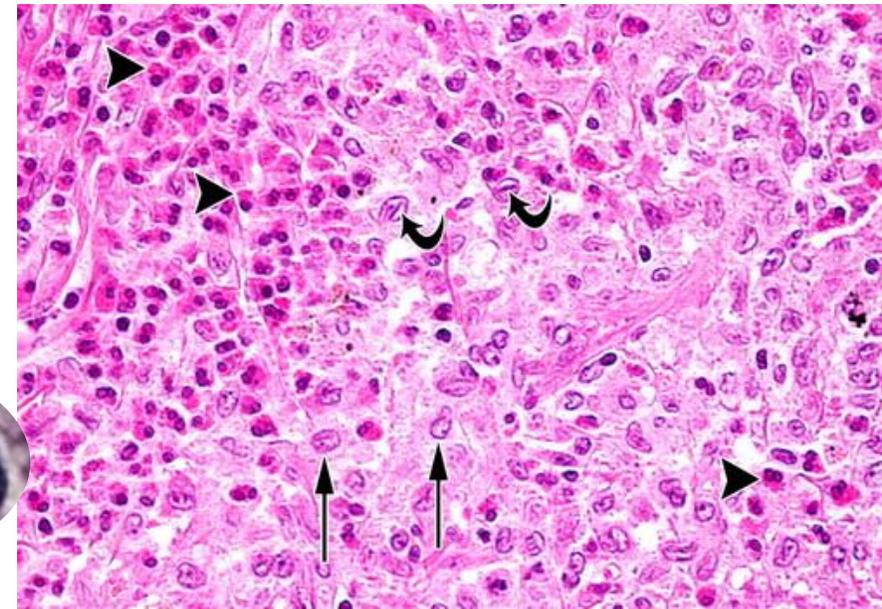
There is wide lymphatic sinusoids and increased numbers of intrasinusoidal macrophages, which expand and distort the sinusoids.



Diseases of Lymph Nodes

Langerhans Cell Histiocytosis

- Also known as **Histiocytosis X** Due to proliferation of langerhans cells.
- More common in childhood (1 - 3 years old) and involves nodal and extra-nodal sites (most common site is bone)
- Langerhans cells show prominent nuclear grooves with admixed eosinophils



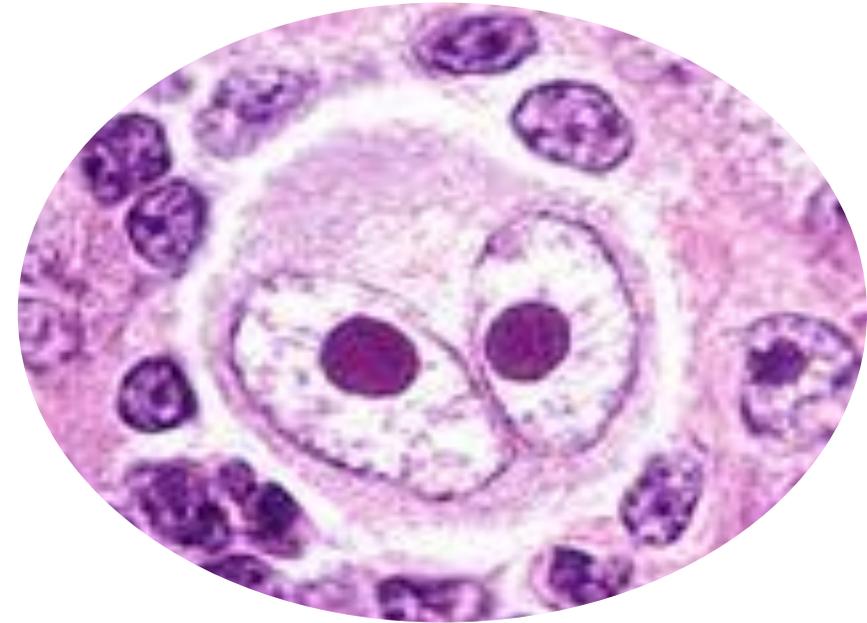
Diseases of Lymph Nodes

Lymphomas

Malignant neoplasms derived from cells native to lymphoid tissue (lymphocytes and rarely histiocytes).

*According to the presence or absence of characteristic **Reed-Sternberg (RS)** cell or their variants:*

- Hodgkin's lymphoma (HL)
- Non Hodgkin's lymphomas (NHLs)

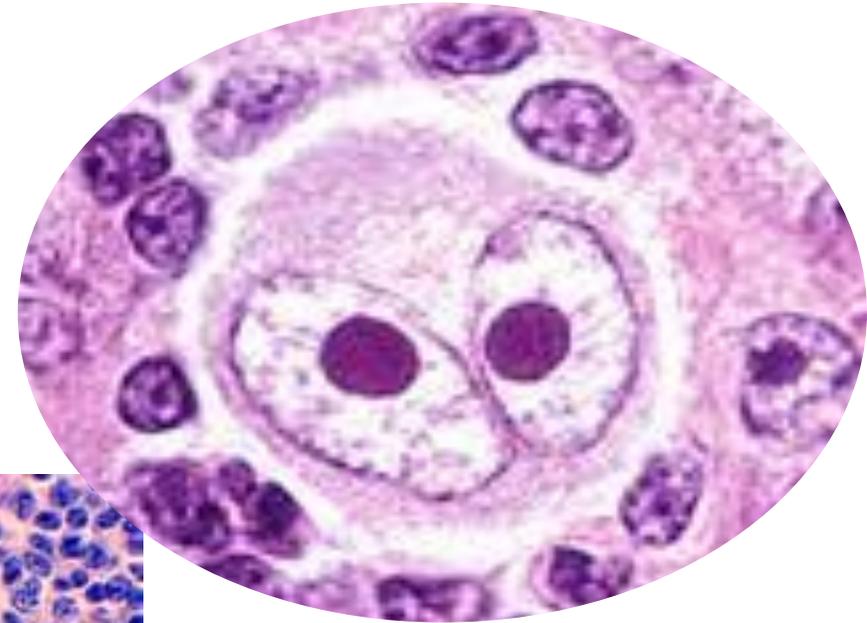
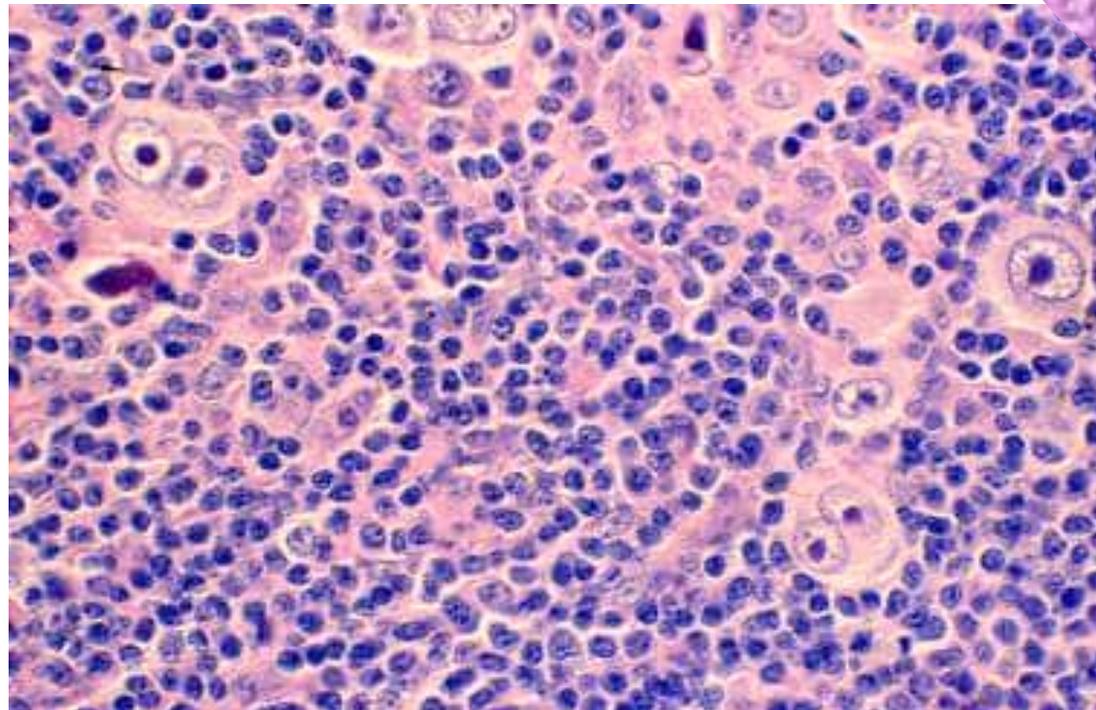


Diseases of Lymph Nodes

Hodgkin's Lymphomas

Malignant lymphoid neoplasms characterized by the presence of characteristic **Reed-Sternberg (RS)** cell or their variants in background of reactive inflammatory cells:

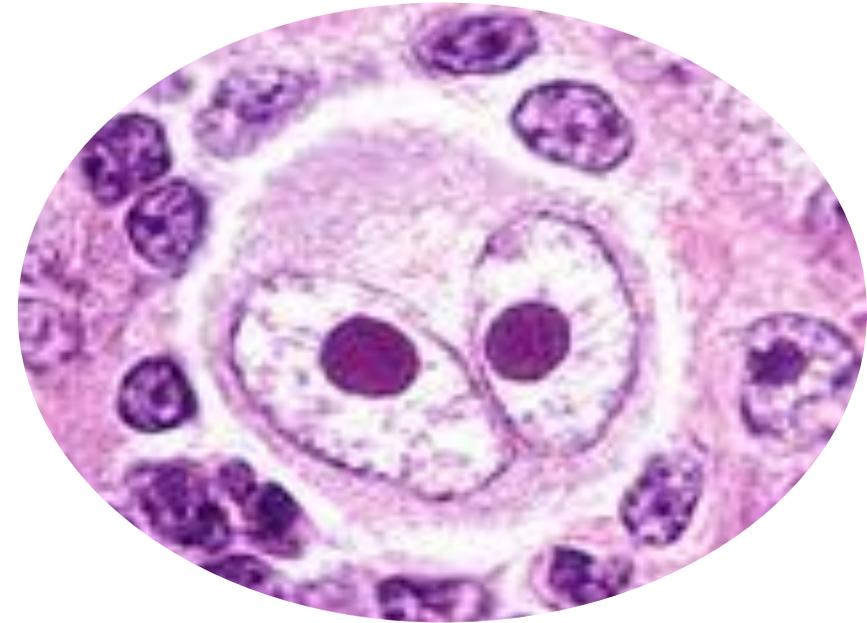
- Eosinophils
- plasma cells
- PNL
- Histiocytes
- lymphocytes



Diseases of Lymph Nodes

Hodgkin's Lymphomas

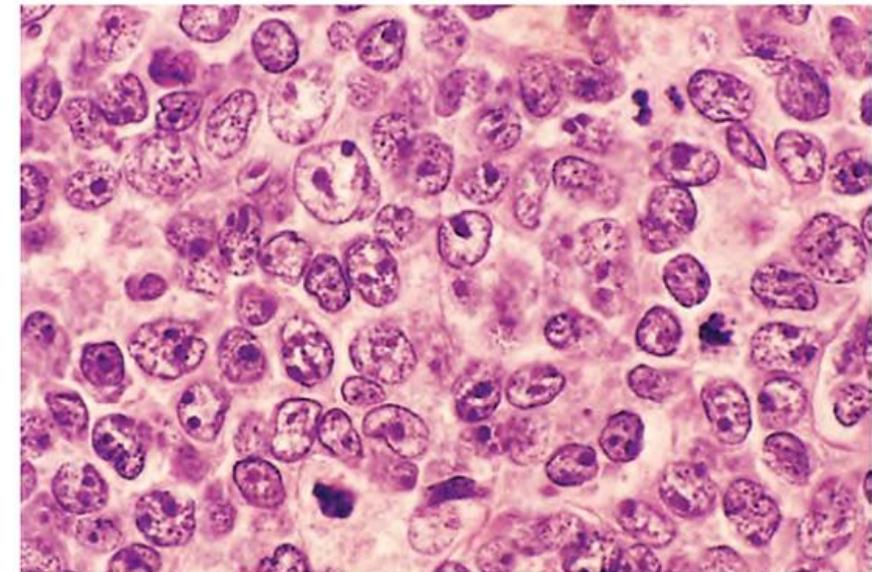
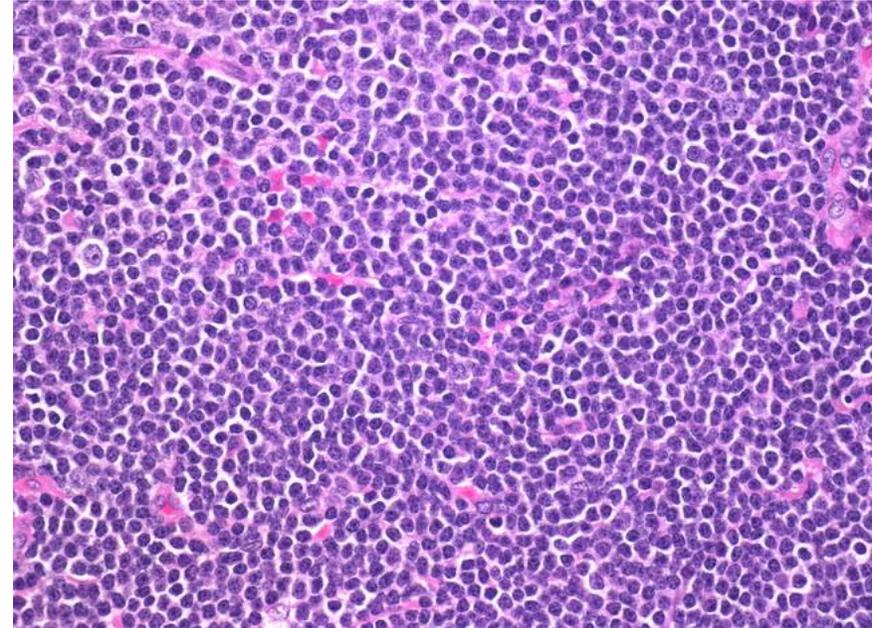
- Reed-Sternberg (RS) is a **large cell** (15-45 μm in diameter) with an enlarged multilobated nucleus, **prominent nucleoli** and abundant usually slightly eosinophilic, cytoplasm.
- Characteristic cells have **two mirror-image nuclei**, each containing a large acidophilic **nucleolus** giving **owl-eye** appearance.
- The immunophenotype of the RS cell is positive expression of **CD15 & CD30**.



Diseases of Lymph Nodes

NonHodgkin's Lymphomas

- More frequent involvement of multiple peripheral node or extra-nodal sites.
- The tumor cause Loss of nodal architecture with replacement by malignant lymphoid cells
- Worse prognosis than Hodgkin's
- B-cell (express **CD20**) or T-cell (express **CD3**) origin



Diseases of Lymph Nodes

NonHodgkin's Lymphomas

Types

I. Precursor B-Cell Neoplasms

B-cell acute lymphoblastic leukemia/lymphoma (B-ALL)

II. Peripheral B-Cell Neoplasms

Chronic lymphocytic leukemia/small lymphocytic lymphoma

B-cell prolymphocytic leukemia

Lymphoplasmacytic lymphoma

Splenic and nodal marginal zone lymphomas

Extranodal marginal zone lymphoma

Mantle cell lymphoma

Follicular lymphoma

Marginal zone lymphoma

Hairy cell leukemia

Plasmacytoma/plasma cell myeloma

Diffuse large B-cell lymphoma

Burkitt lymphoma

III. Precursor T-Cell Neoplasms

T-cell acute lymphoblastic leukemia/lymphoma (T-ALL)

IV. Peripheral T-Cell and NK-Cell Neoplasms

T-cell prolymphocytic leukemia

Large granular lymphocytic leukemia

Mycosis fungoides/Sézary syndrome

Peripheral T-cell lymphoma, unspecified

Anaplastic large-cell lymphoma

Angioimmunoblastic T-cell lymphoma

Enteropathy-associated T-cell lymphoma

Panniculitis-like T-cell lymphoma

Hepatosplenic $\gamma\delta$ T-cell lymphoma

Adult T-cell leukemia/lymphoma

Extranodal NK/T-cell lymphoma

NK-cell leukemia

Now....Answer this

A child 15 years old, presented with generalized lymph node enlargement, biopsy examination showed infiltration of lymph node by a mixture of small lymphocytes, eosinophils, plasma cells and giant cells with bilobed nucleus and large prominent nucleoli

1. What is the diagnosis of this case?
2. What is the name of the giant cells?
3. Which of the above mentioned cells are neoplastic?

Diseases of Spleen

Splenomegaly

It is the enlargement of the spleen

Types and classification

1. According to the rate of enlargement

Acute

Septicemia,
Pyemia,
Typhoid fever,
Glandular fever (infectious
mononucleosis)

Chronic

Bacterial: Brucellosis, T.B., Syphilis
Parasitic: Bilharziasis, leishmania, Malaria
Circulatory disturbances as Congestion
Hematological disorders Hemolytic anemia
Storage disease
Amyloidosis
Histiocytosis x
Tumors as leukemia & lymphoma

Diseases of Spleen

Splenomegaly

2. According to the size

Massive splenomegaly (weight >1000 gm)

Leukemia
Lymphomas
Malaria
Storage disease

Moderate splenomegaly (weight 500-1000 gm)

Congestive splenomegaly
Autoimmune hemolytic
anemia
Amyloidosis
(histiocytosis x)
Chronic splenitis
Tuberculosis

Mild splenomegaly (weight <500 gm)

Acute splenitis
septicemia
Pyemia,
Typhoid fever
Glandular fever

Now....Answer this

Which of the following causes massive splenomegaly:

- a) Typhoid fever
- b) Anemia
- c) Tuberculosis
- d) Leukemia
- e) splenitis



Discussion & Feedback

References & recommended readings

1. Robbins & Cotran Pathologic Basis of Disease,
(Robbins Pathology), 2018 ISBN: 978-0-323-35317-5,
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2. Webpath:

<https://webpath.med.utah.edu/webpath.html>

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Thank you

