Hodgkin Lymphoma

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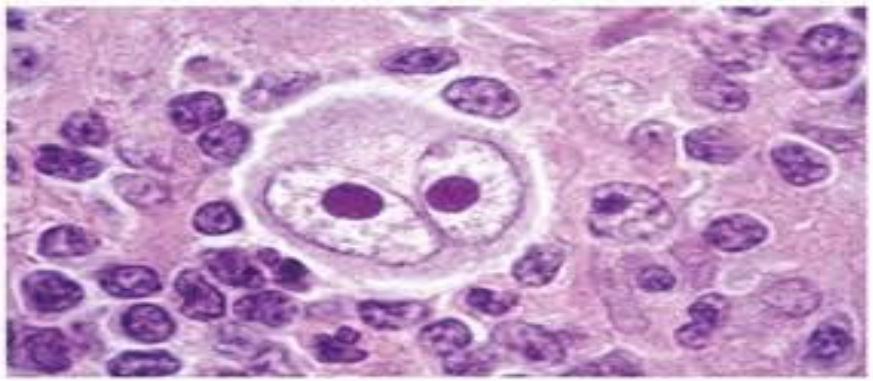
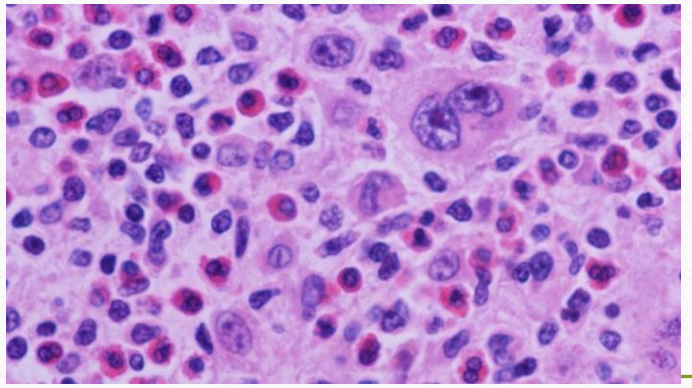
Table 13.7 Differences Between Hodgkin and Non-Hodgkin Lymphomas

Hodgkin Lymphoma	Non-Hodgkin Lymphoma
More often localized to a single axial group of nodes (cervical, mediastinal, para-aortic)	More frequent involvement of multiple peripheral nodes
Orderly spread by contiguity	Noncontiguous spread
Mesenteric nodes and Waldeyer ring rarely involved	Waldeyer ring and mesenteric nodes commonly involved
Extranodal presentation rare	Extranodal presentation common

Hodgkin Lymphoma a distinctive group of B-cell neoplasms

- Morphologically, the distinctive feature of Hodgkin lymphoma is the presence of neoplastic giant cells called Reed-Sternberg cells.
- These cells release factors that induce the accumulation of reactive lymphocytes, macrophages, and granulocytes, which typically make up greater than 90% of the tumor cellularity.
- Molecular studies have shown that the neoplastic Reed-Sternberg cells are derived from germinal center or post–germinal center B cells.





morphology

- **Reed-Sternberg (RS) cell:** a very large cell with an enormous multilobate nucleus, exceptionally prominent nucleoli (inclusion-like) & abundant cytoplasm. (**owl-eye appearance).**
- RS cells are surrounded by a heterogeneous inflammatory infiltrate containing small lymphocytes, **eosinophils,** plasma cells, and macrophages.
- These characteristic nonneoplastic, inflammatory cells are generated by cytokines secreted by RS cells (IL-5,TGF-β, & IL-13).

Hodgkin Lymphoma

- It was the first human cancer to be successfully treated with radiation therapy and chemotherapy and is curable in most cases.

Clinical features

- Usually Young age, but can affect any age
- Single lymph node or region of lymph nodes (Cervical and mediastinal).
- Rarely tonsils, Waldeyer ring or extranodal sites.
- Manifests as painless lymphadenopathy, patients in advanced disease (stages III & IV) are more likely to exhibit B symptoms (fever, weight loss, night sweats) as well as pruritus & anemia.
- Spreads in a contiguous manner.
- Treated with chemotherapy, sometimes together with involved field radiotherapy.
- The outlook, even in advanced disease, is very good, the 5-year survival rate for patients with stage 1-2 disease is more than 90%.

Hodgkin lymphoma - Histological subtypes
The WHO classification

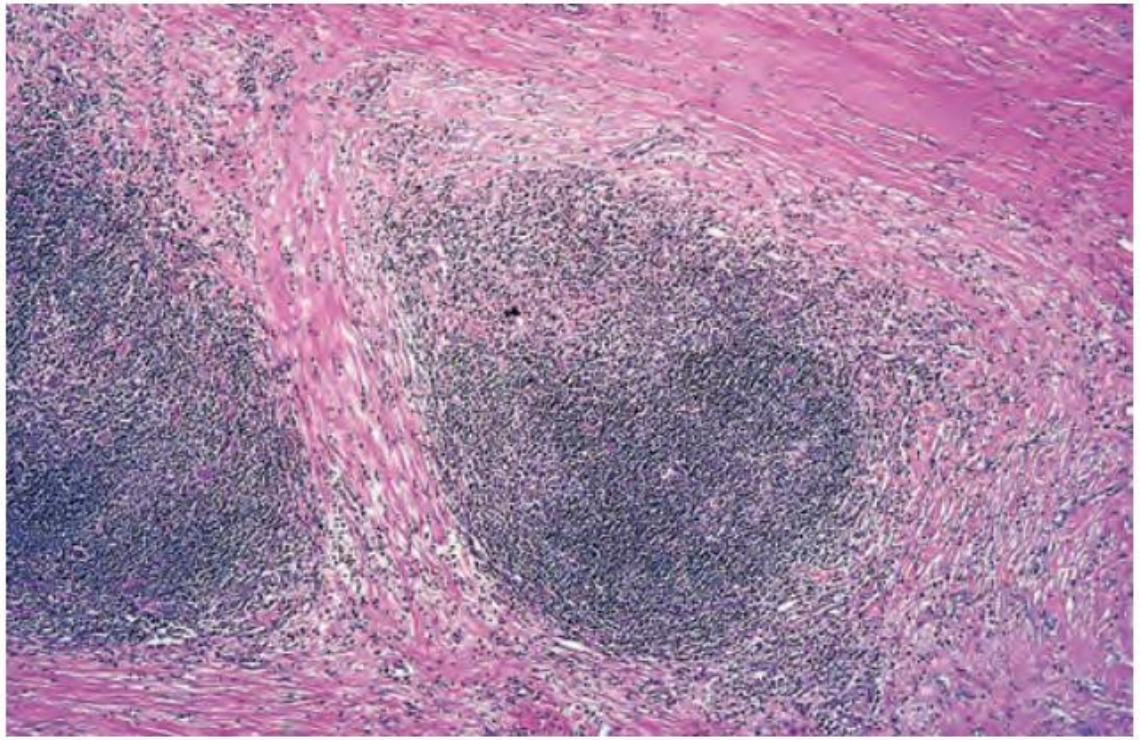
- **Nodular lymphocyte predominant HL (5%)**
  - Slow growing
  - localized
- **Classical Hodgkin lymphoma (95%)**
  - nodular sclerosing
  - mixed cellularity
  - lymphocyte-rich
  - lymphocyte depleted

Table 13.8 Subtypes of Hodgkin Lymphoma

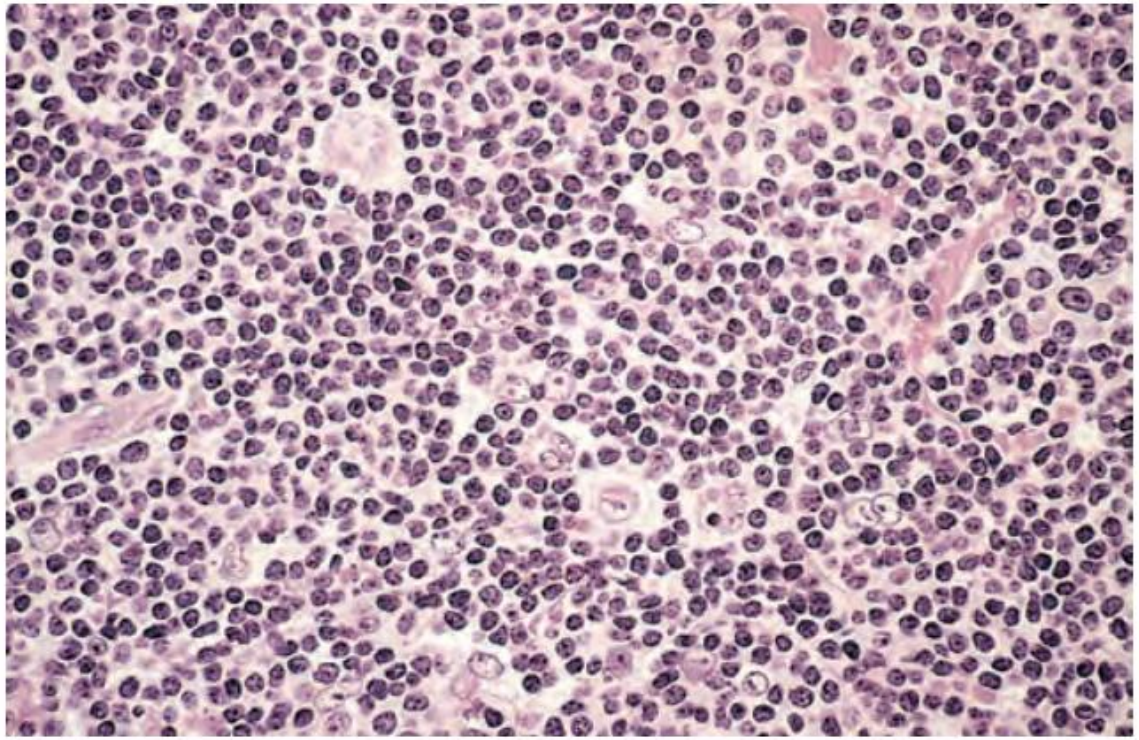
Subtype	Morphology and Immunophenotype	Typical Clinical Features
Nodular sclerosis	Frequent lacunar cells and occasional diagnostic RS cells; background infiltrate composed of T lymphocytes, eosinophils, macrophages, and plasma cells; fibrous bands dividing cellular areas into nodules. RS cells CD15+, CD30+; usually EBV–	Most common subtype; usually stage I or II disease; frequent mediastinal involvement; equal occurrence in males and females, most patients young adults
Mixed cellularity	Frequent mononuclear and diagnostic RS cells; background infiltrate rich in T lymphocytes, eosinophils, macrophages, plasma cells; RS cells CD15+, CD30+; 70% EBV+	More than 50% present as stage III or IV disease; occurrence greater in males than females; biphasic incidence, peaking in young adults and again in adults older than 55
Lymphocyte-rich	Frequent mononuclear and diagnostic RS cells; background infiltrate rich in T lymphocytes; RS cells CD15+, CD30+; 40% EBV+	Uncommon; occurrence greater in males than females; tends to be seen in older adults
Lymphocyte depletion	Reticular variant: Frequent diagnostic RS cells and variants and a paucity of background reactive cells; RS cells CD15+, CD30+; most EBV+	Uncommon; more common in older men, HIV-infected individuals, and people in low income countries; often presents with advanced disease
Nodular lymphocyte predominant	Frequent L&H (popcorn cell) variants in a background of follicular dendritic cells and reactive B cells; RS cells CD20+, CD15–, CD30–; EB–	Uncommon; young males with cervical or axillary lymphadenopathy; mediastinal

HIV, human immunodeficiency virus; *L&H,* lymphohistiocytic; *RS,* Reed-Sternberg.

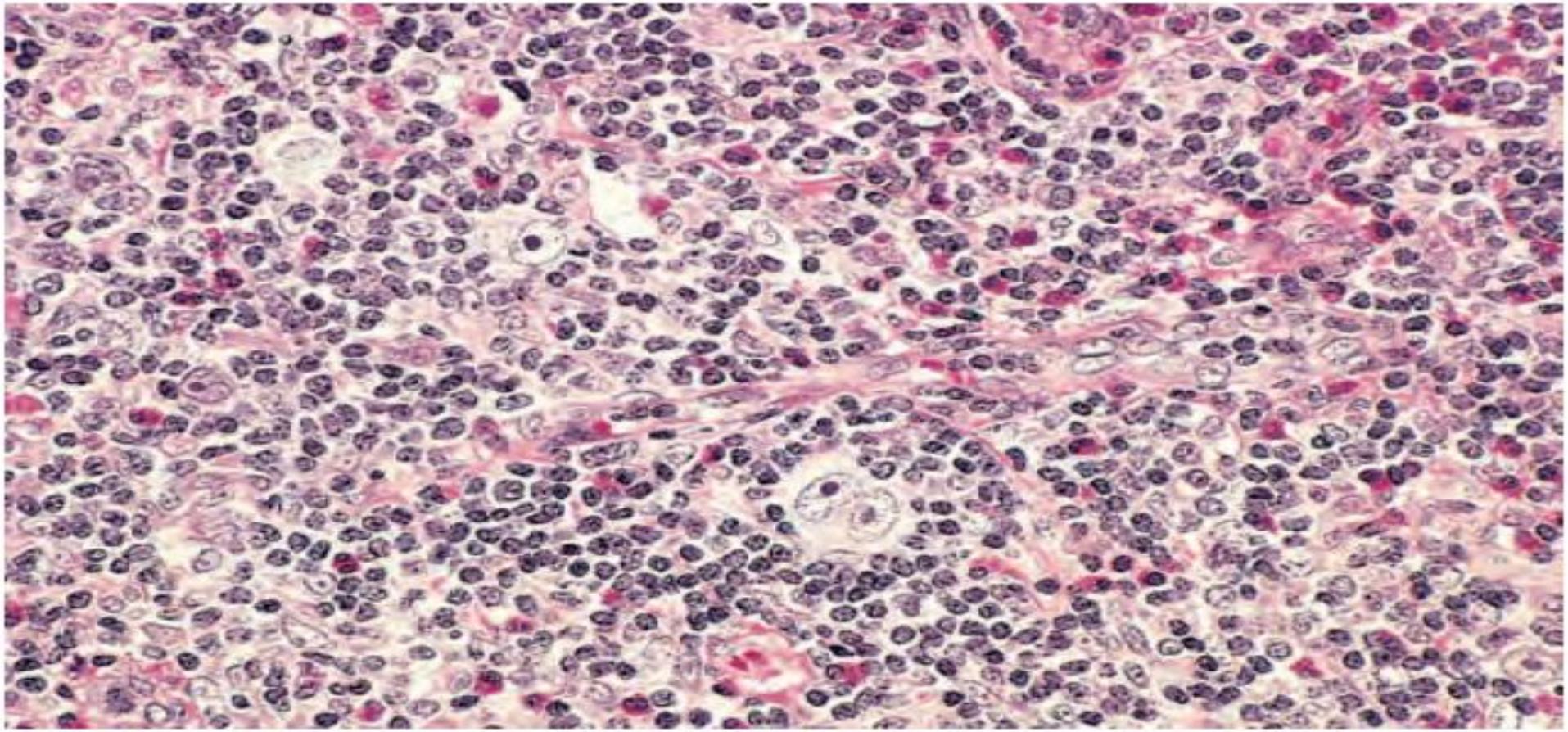
Morphology according to the subtypes



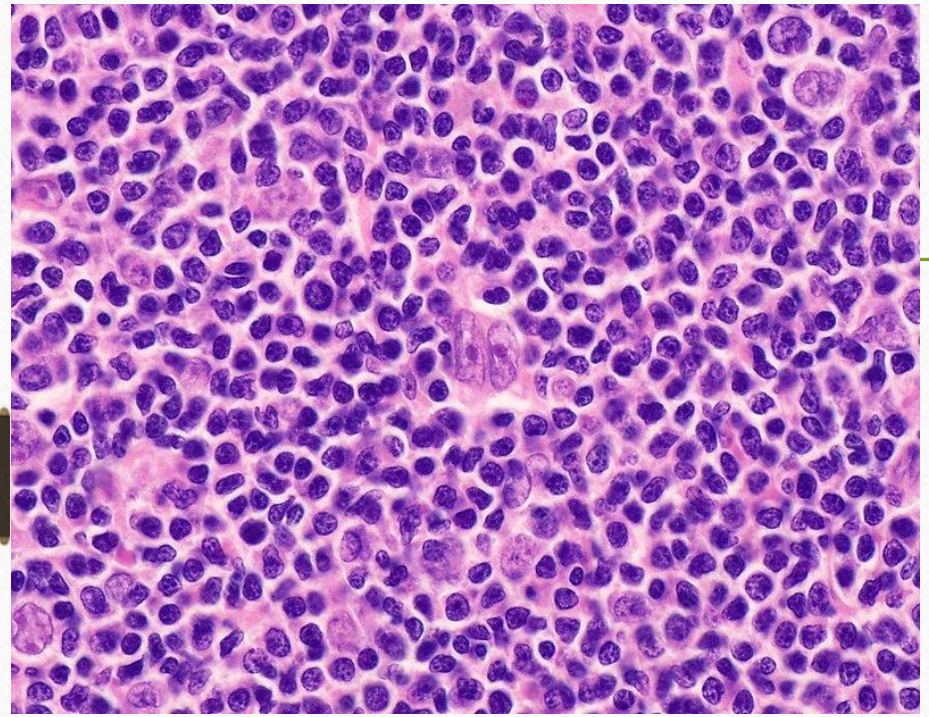
Hodgkin lymphoma, nodular sclerosis type. Low-power view shows well-defined bands of pink, acellular collagen that subdivide the tumor into nodules. (Courtesy Dr. Robert W. McKenna, Department of Pathology, University of Texas Southwestern Medical School, Dallas, Tex.)

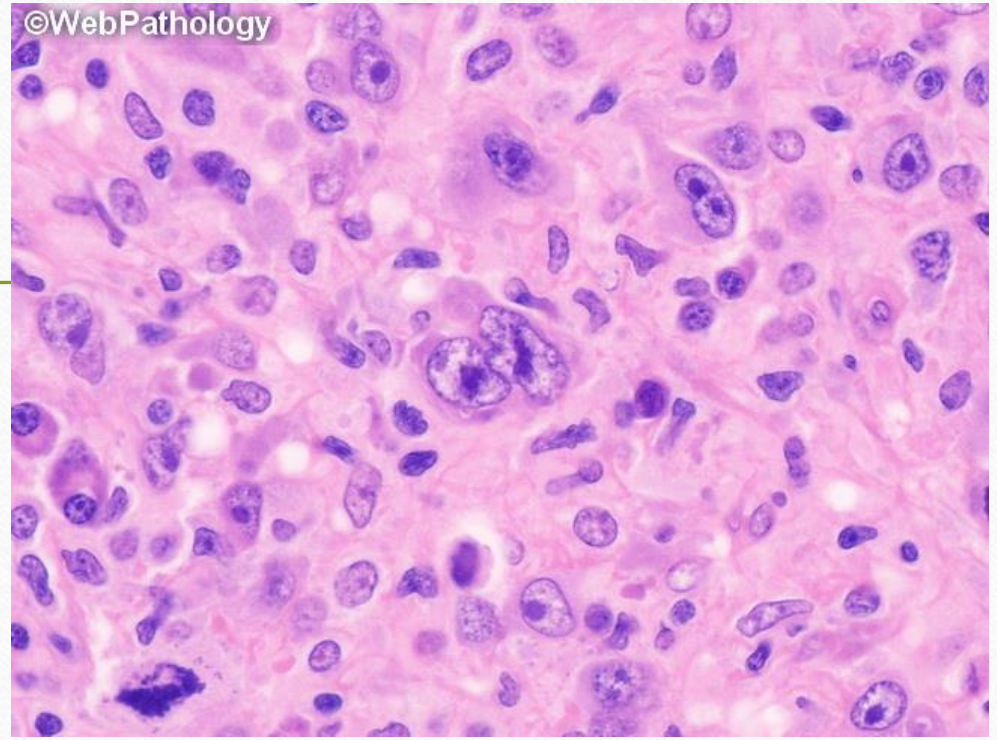


Hodgkin lymphoma, lymphocyte predominance type. Numerous mature-looking lymphocytes surround scattered, large, pale-staining lymphohistiocytic variants (popcorn cells). (Courtesy Dr. Robert W. McKenna, Department of Pathology, University of Texas Southwestern Medical School, Dallas, Tex.)



Hodgkin lymphoma, mixed-cellularity type. A diagnostic, binucleate Reed-Sternberg cell is surrounded by reactive cells including eosinophils (bright red cytoplasm), lymphocytes, and macrophages.

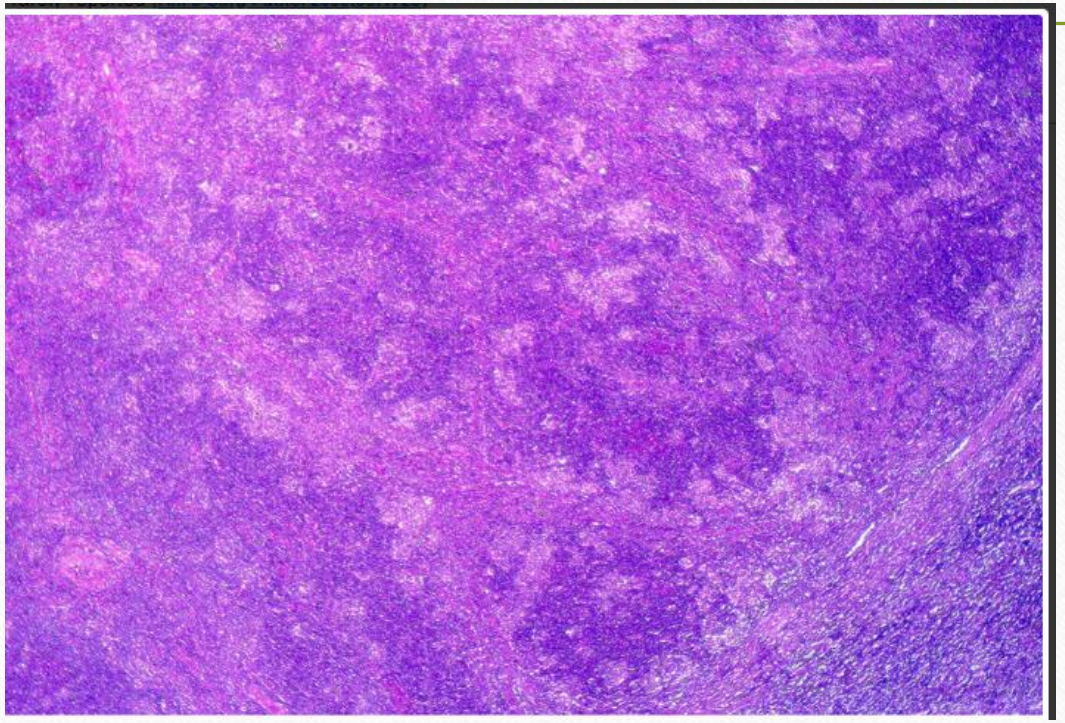




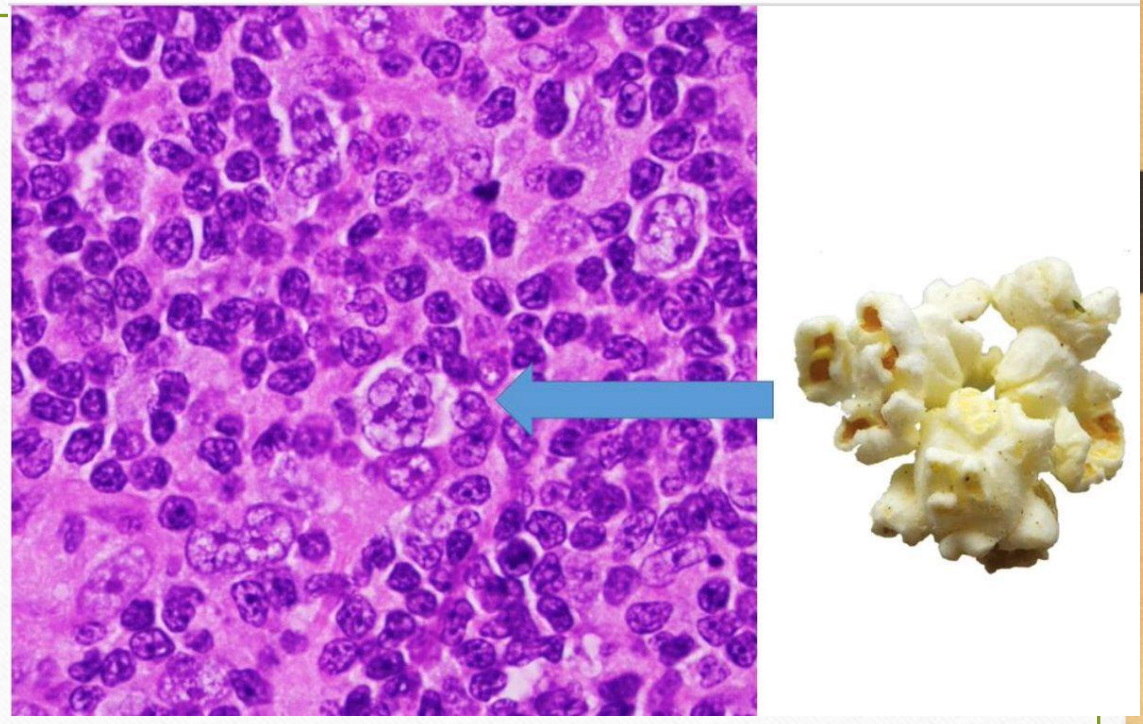
Lymphocytes rich

lymphocytes depleted

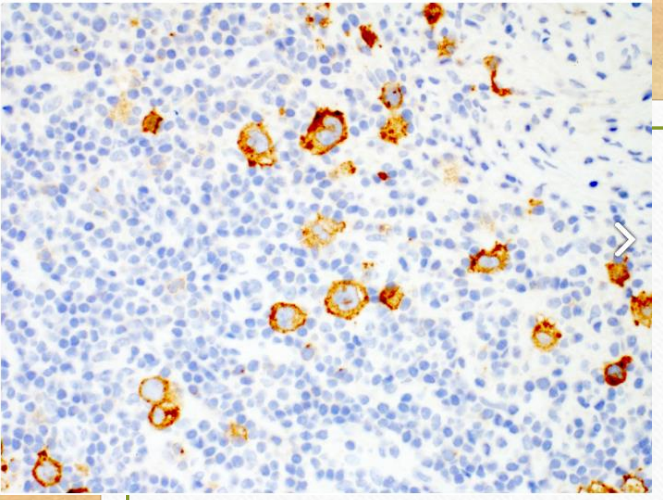
Nodular lymphocyte predominant Hodgkin lymphoma



Vaguely nodular architecture



popcorn cells



CD30

Immunophenotype

- In Classic: Typical RS cells PAX5 (a B-cell transcription factor), CD15, and CD30 and negative for other B-cell markers, T-cell markers, and CD45 (leukocyte common antigen).
- In NLP HL: express B-cell markers typical of germinal center B cells, such as CD20 and BCL6, and are usually negative for CD15 and CD30.

- The spread of Hodgkin lymphoma is remarkably stereotypic: nodal disease first, then splenic disease, hepatic disease, and finally involvement of the marrow and other tissues.

TREATMENT

- Low-stage localized Hodgkin lymphoma can be cured with involved field radiotherapy.
- chemotherapy
- Classic Hodgkin lymphoma is highly responsive to immune checkpoint inhibitors, which antagonize the activity of PD-L1 and PD-L2 expressed on the surface of Reed-Sternberg cells.
- Keep in mind the over all prognosis is good ☺

- GOOD LUCK IN YOUR EXAMS