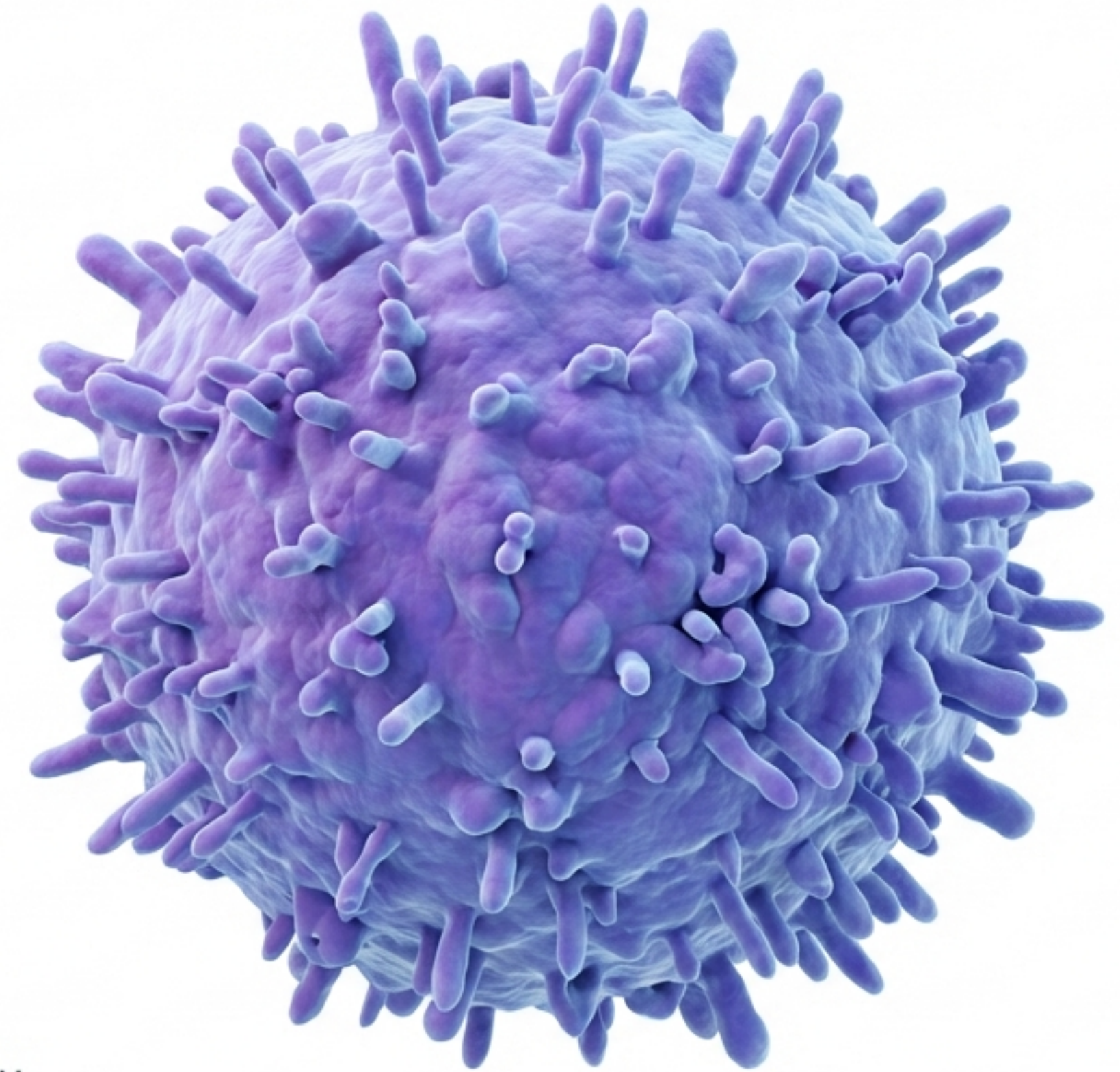


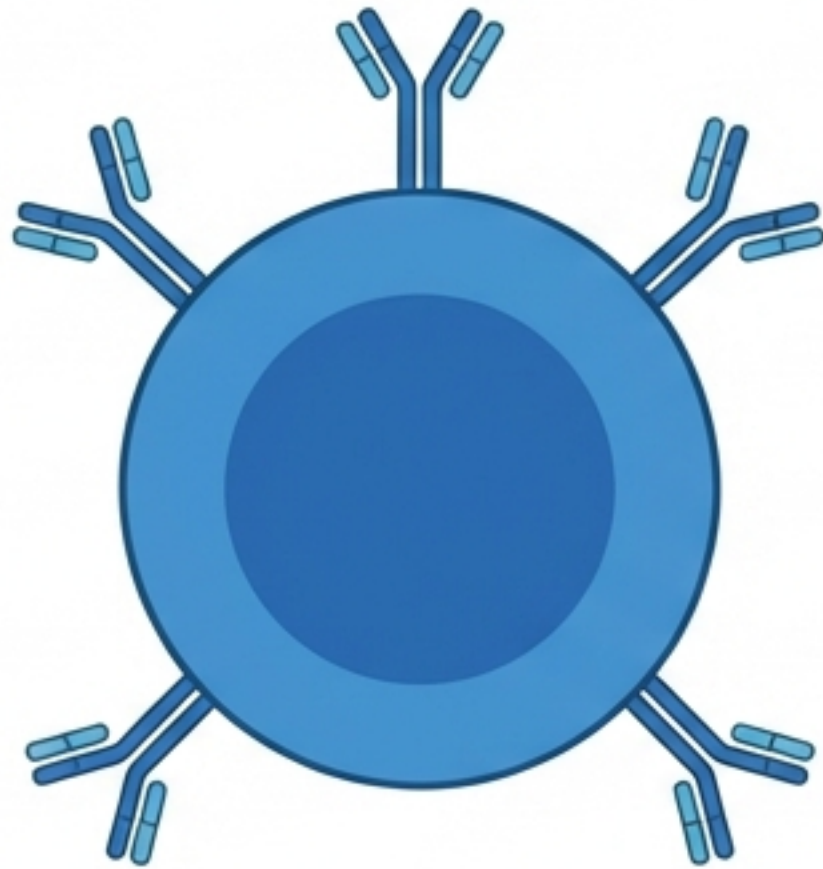
Lymphoma

Malignant Lymphoproliferative Disorders: From Pathogenesis to Clinical Management



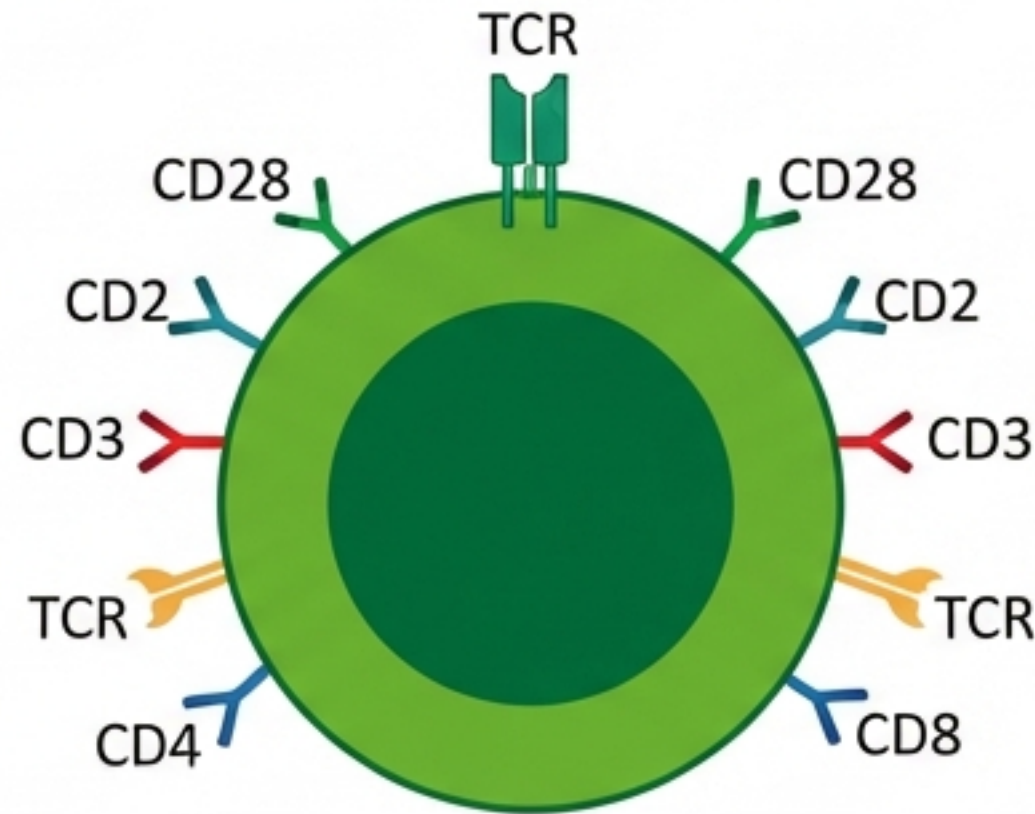
Physiology | Classification | Diagnosis | Immunotherapy

The Defenders: Physiology of Lymphocytes



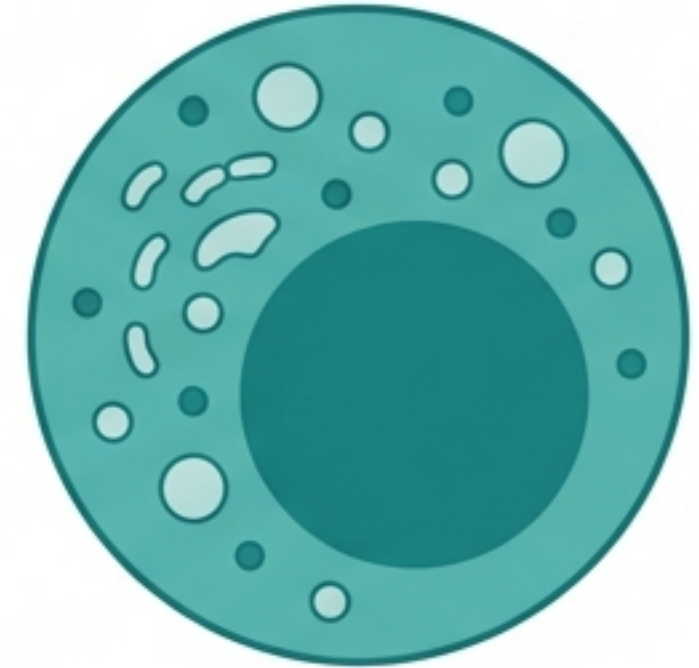
B-Cells

Humoral Immunity: Antibody production & Antigen presentation.



T-Cells

Cell-Mediated Immunity: Direct killing (Tc) & Regulation (Th).

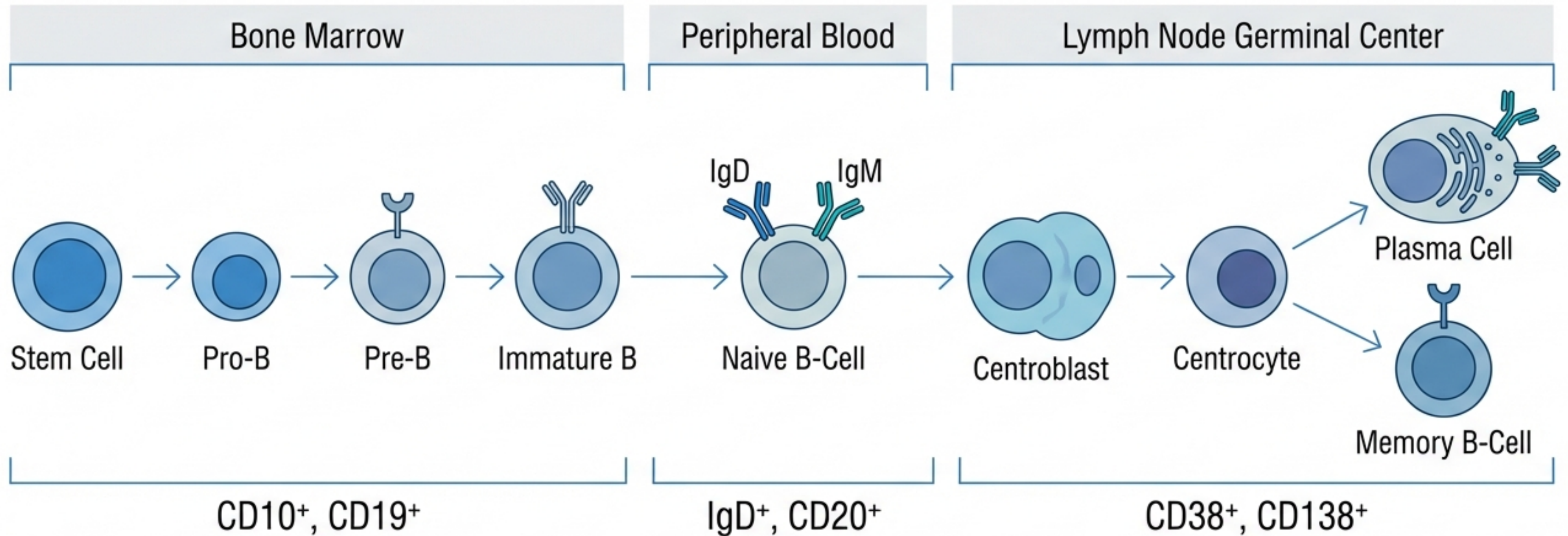


NK Cells

Innate Surveillance: Rapid response to viral/tumor cells.

Origin: All lineages arise from hematopoietic stem cells in the Bone Marrow. T-cells migrate to the Thymus for maturation.

The Journey: B-Cell Differentiation Timeline

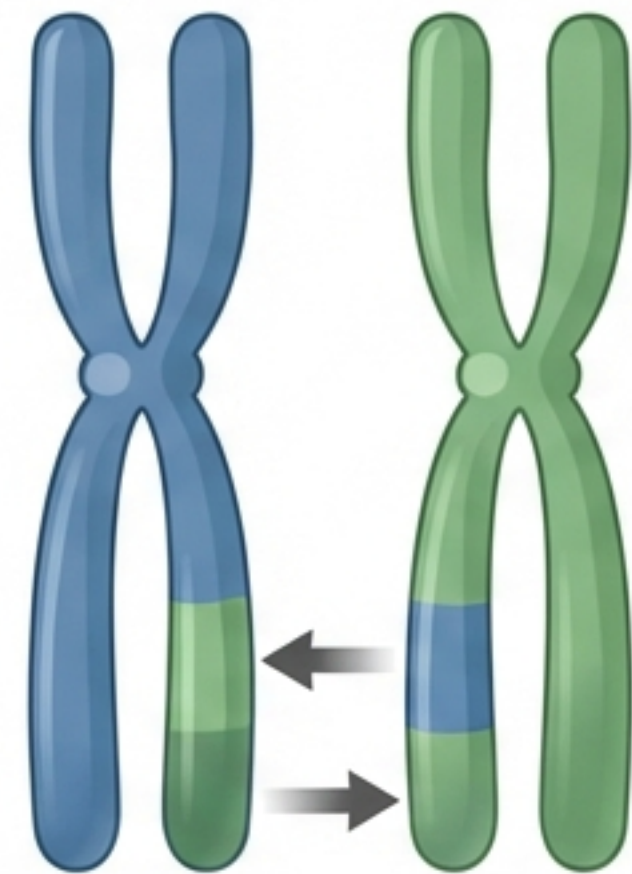


Pathogenesis: Malignant Transformation

Risk Factors

- - **Infections:** Chronic antigenic stimulation (Viral/Bacterial)
- - **Immune Status:** Immunodeficiency (Post-transplant), Autoimmune diseases (SLE, RA)
- - **Environmental:** Immunosuppressant medications

Genetic Translocations

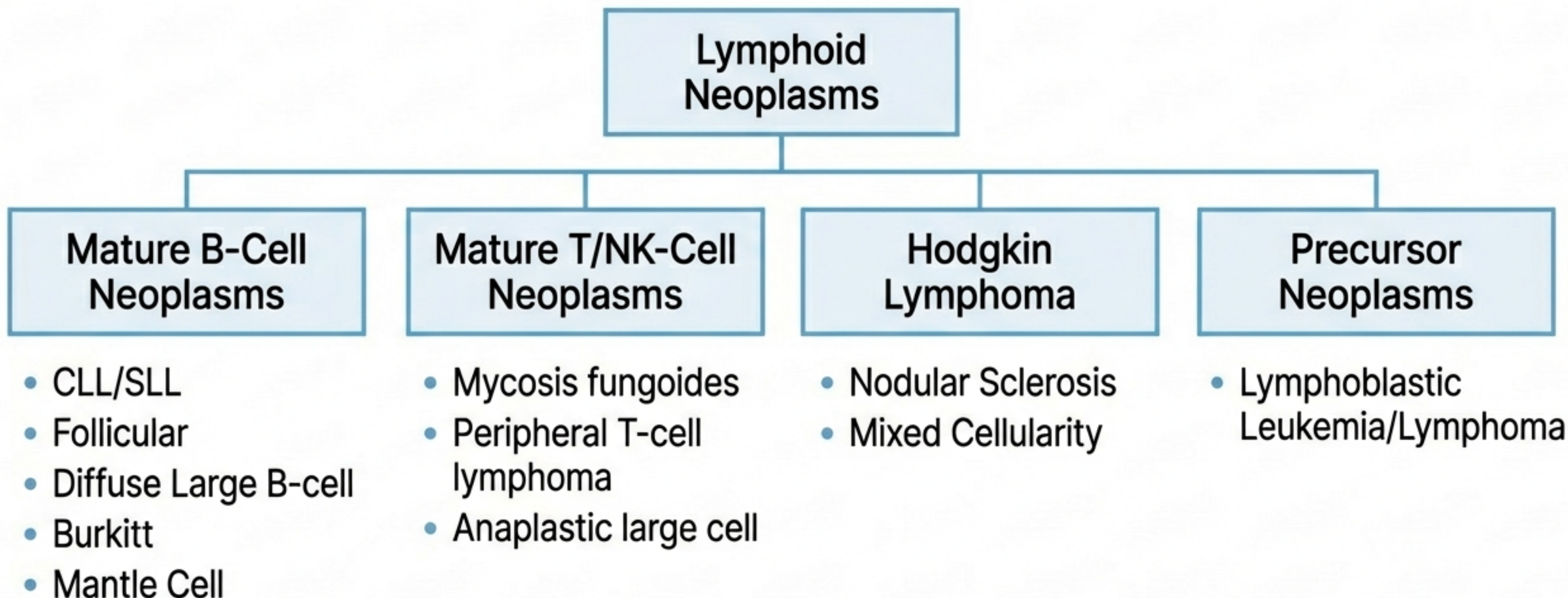


t(11,14): Cyclin D1
(Mantle Cell Lymphoma)

• **t(14,18):** BCL2
(Follicular Lymphoma)

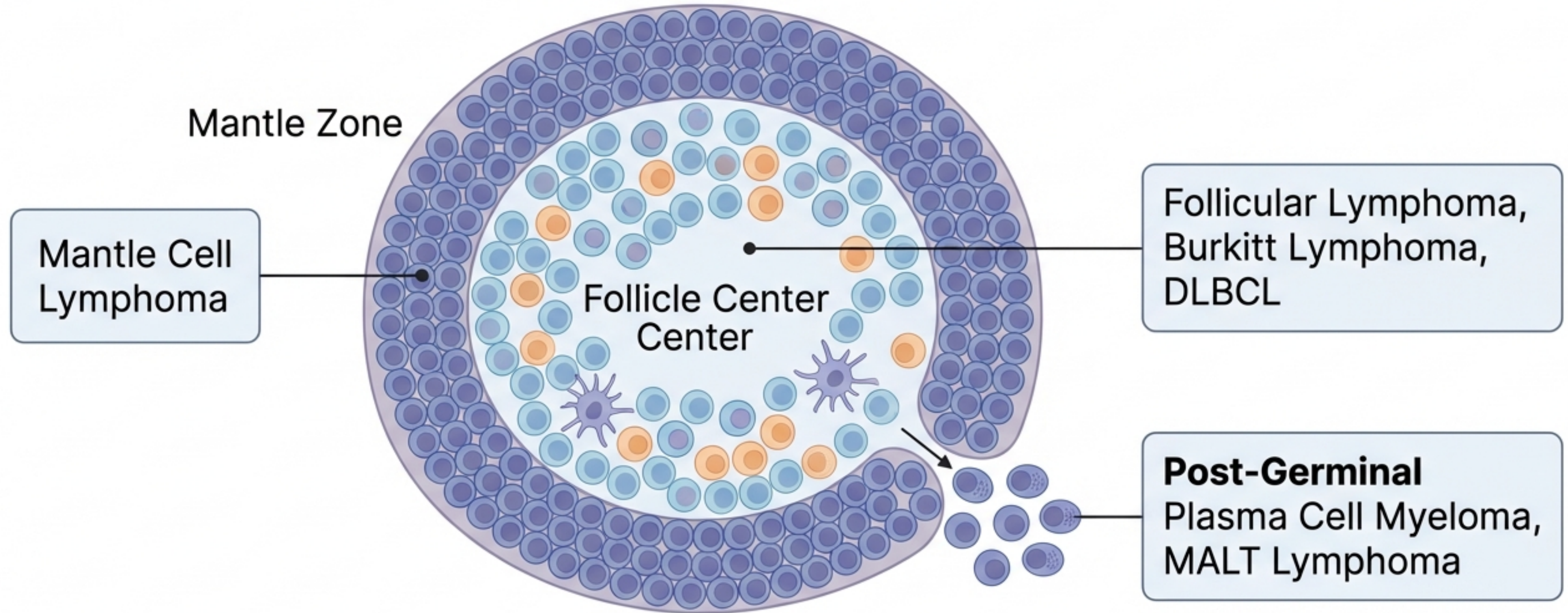
• **t(8,14):** C-Myc
(Burkitt Lymphoma)

The WHO Classification System

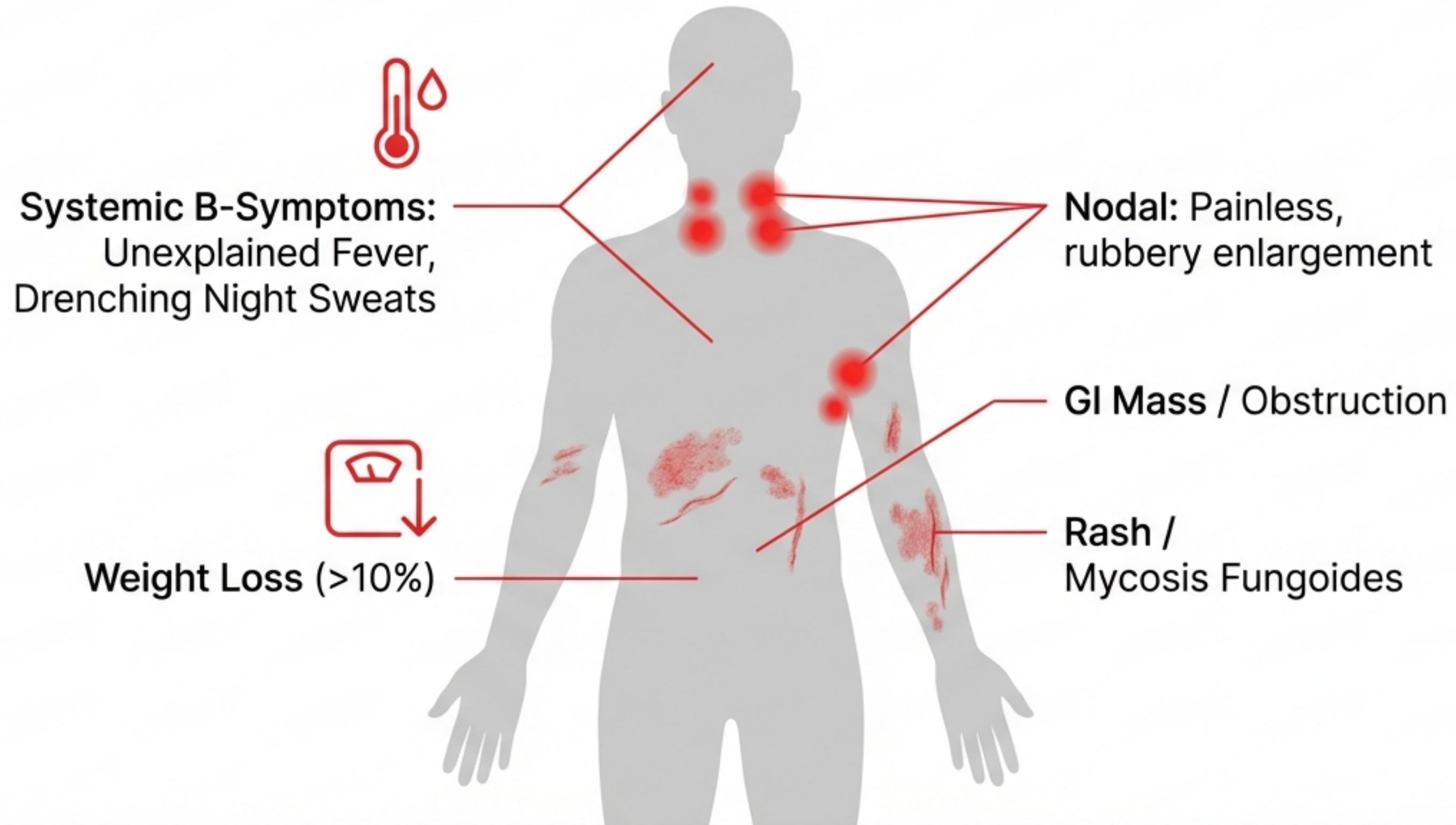


Anatomy of a Malignancy: The Germinal Center

Lymph Node Germinal Center (Follicle)

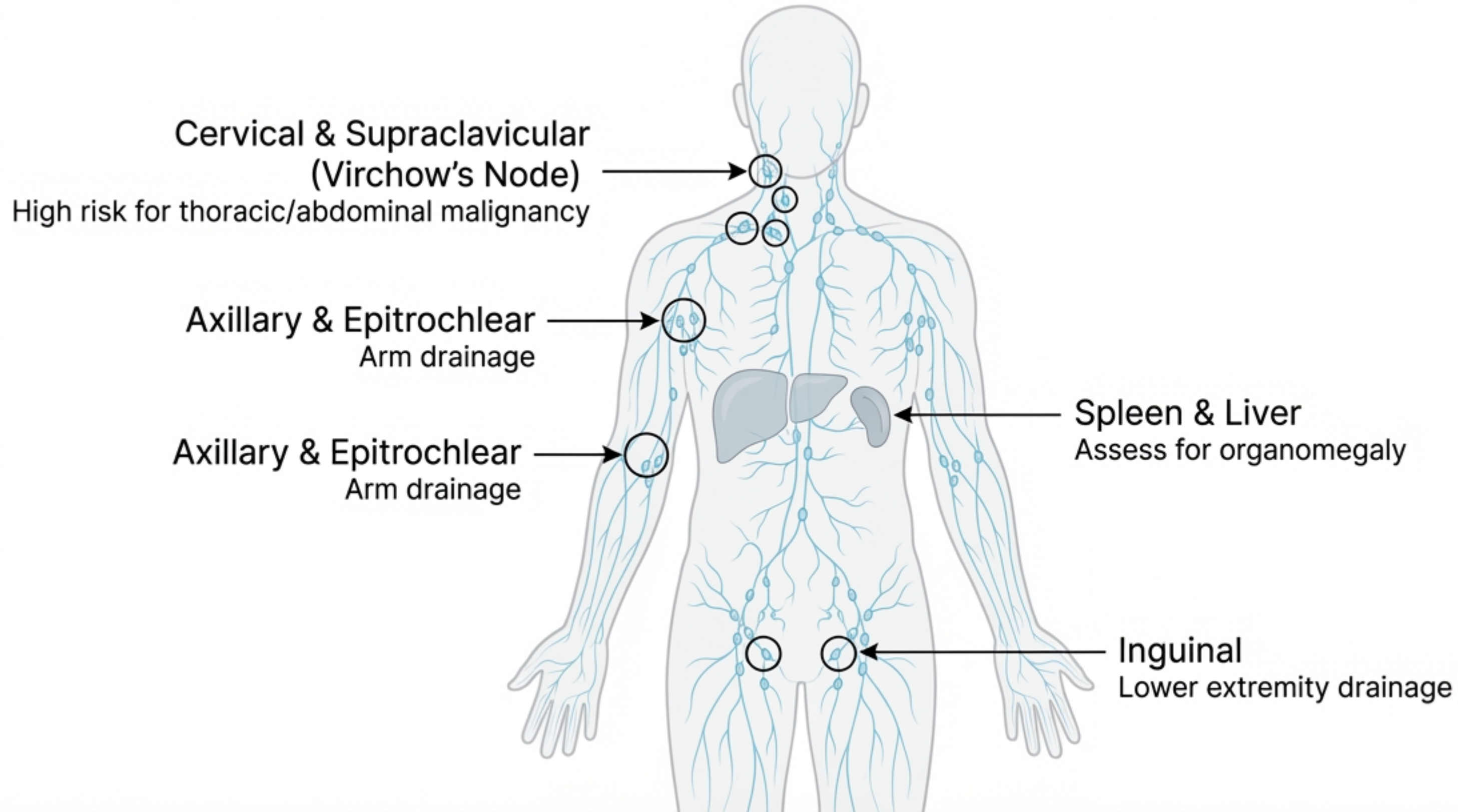


Clinical Presentation: The Great Mimicker



Physical Examination & Nodal Regions

CLINICAL EDITORIAL



Paraneoplastic Syndromes

Syndrome	Presentation	Associated Malignancy/Antibody
Limbic Encephalitis (Ophelia Syndrome)	Memory loss, confusion	Hodgkin Lymphoma (Anti-mGLU5)
Cerebellar Degeneration	Ataxia, balance issues	Hodgkin Lymphoma (Anti-Tr)
Myasthenia Gravis	Muscle weakness	Thymoma / Lymphoma
Dermatomyositis	Skin rash + muscle weakness	NHL

Medical Emergency: Tumor Lysis Syndrome (TLS)

Metabolic complications caused by rapid cell death.



HyperPhosphatemia
(Causing calcium precipitation)



HyperUricemia
(Causing renal failure/crystals)



HypoCalcemia
(Causing seizures, tetany)



HyperKalemia
(Causing arrhythmias)

Management: Aggressive hydration, 💧, Allopurinol, 💊, Rasburicase 💉

Case Study: 22-Year-Old Female

History:

- 8 months of fatigue, weight loss, joint pain (knees).
- Hair loss.

Physical Exam:

- Hepatomegaly & Splenomegaly present.
- No superficial lymphadenopathy.

Labs:

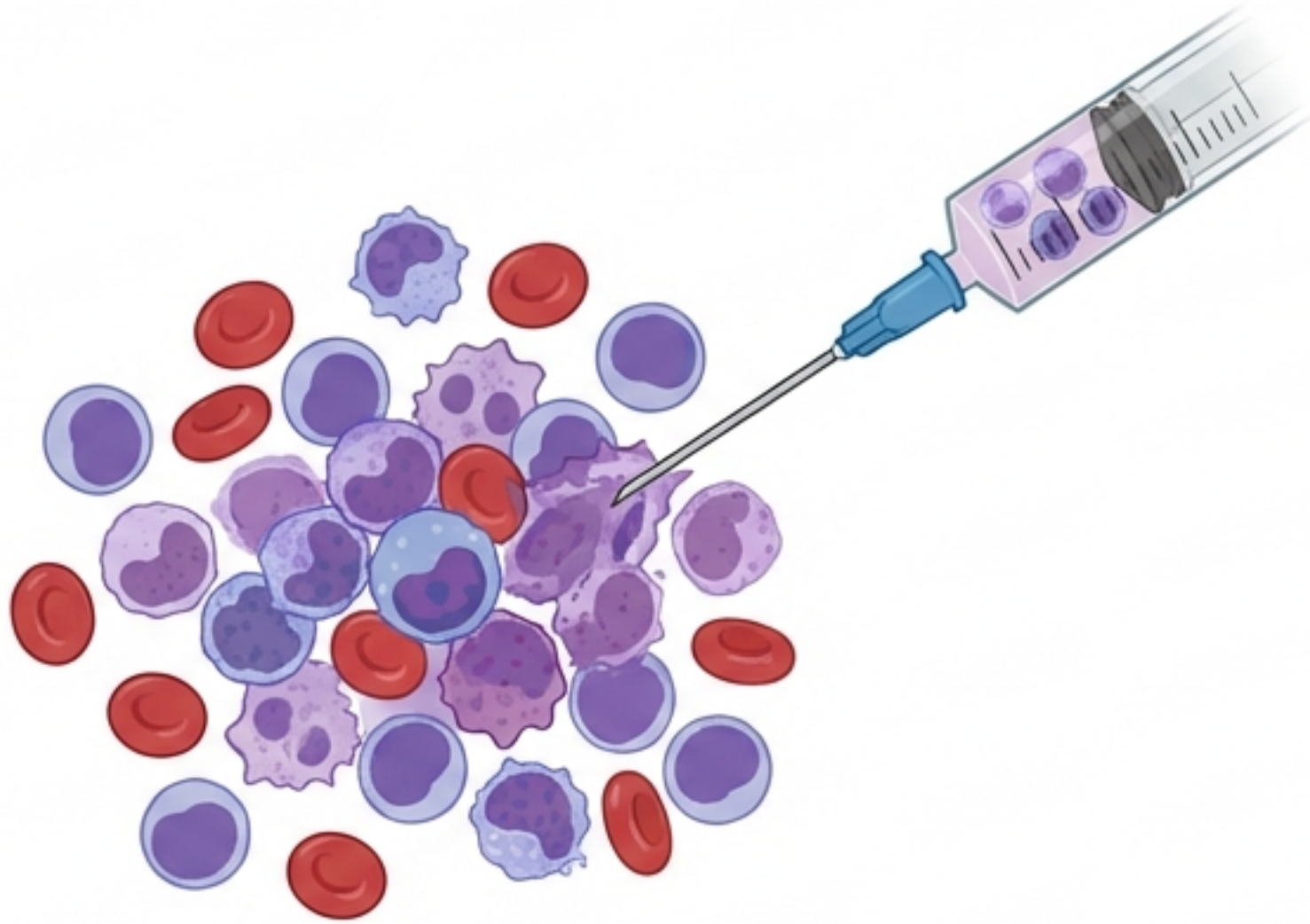
- Leucopenia, Normocytic anemia.
- High LDH.
- Positive ANA.

The Diagnostic Dilemma:

Positive ANA + Joint Pain suggests Lupus (SLE), but High LDH + Organomegaly raises suspicion for Malignancy.

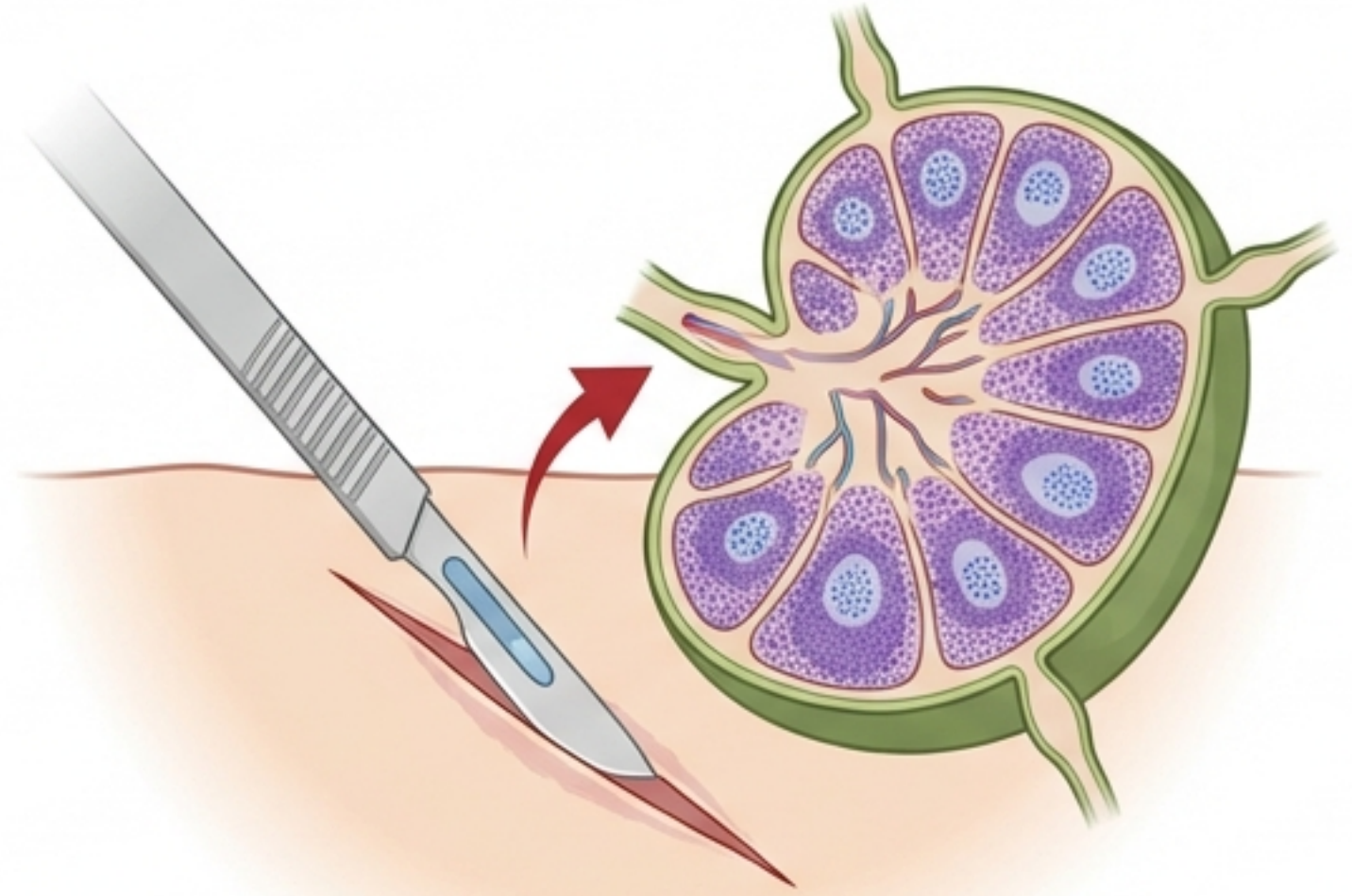
The Diagnostic Challenge: Tissue is the Issue

Fine Needle Aspiration (FNA)



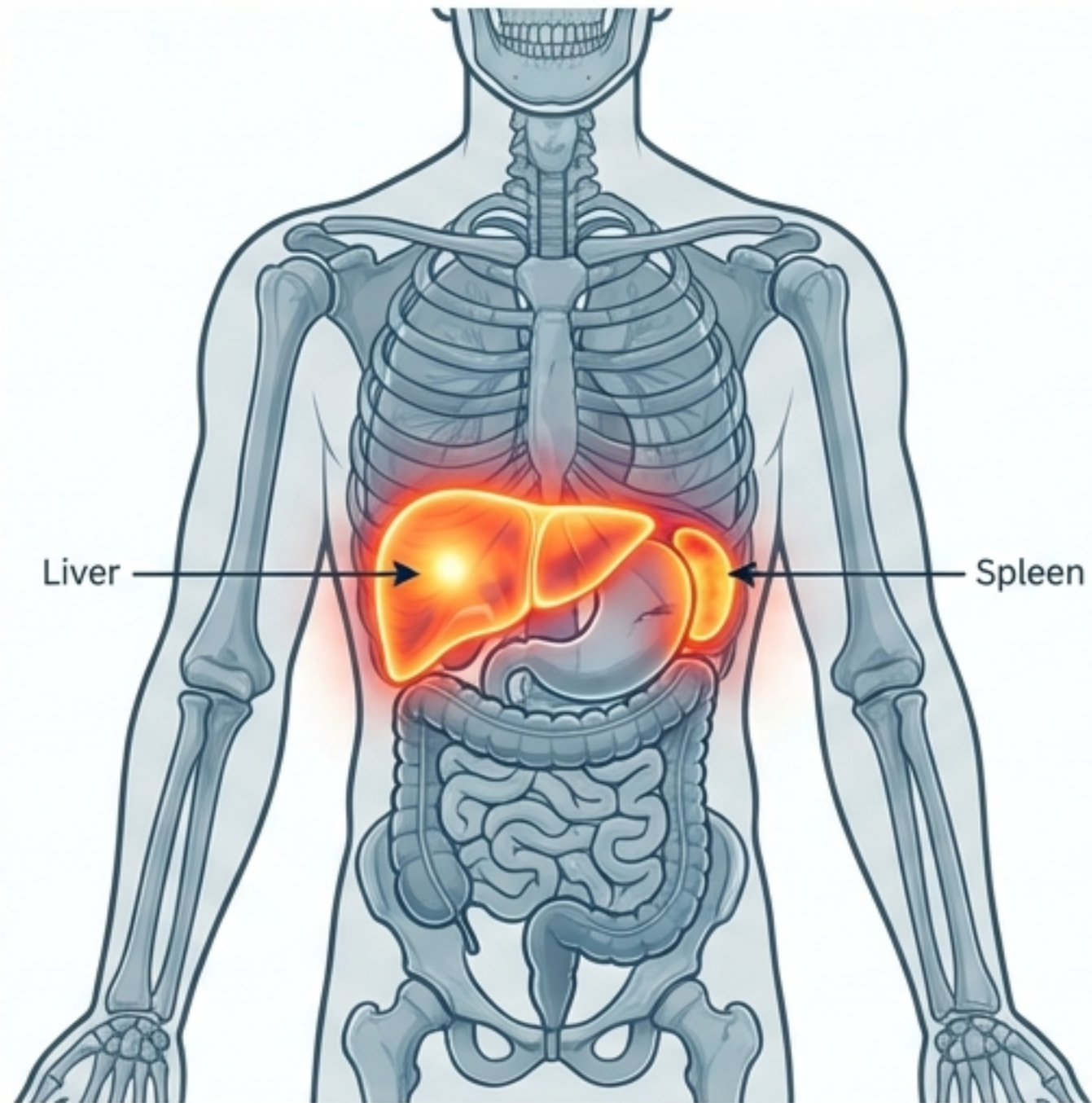
Cytology only. Loss of architecture.
Result: 'Reactive lymphoid proliferation'
(False Negative).

Excisional Biopsy



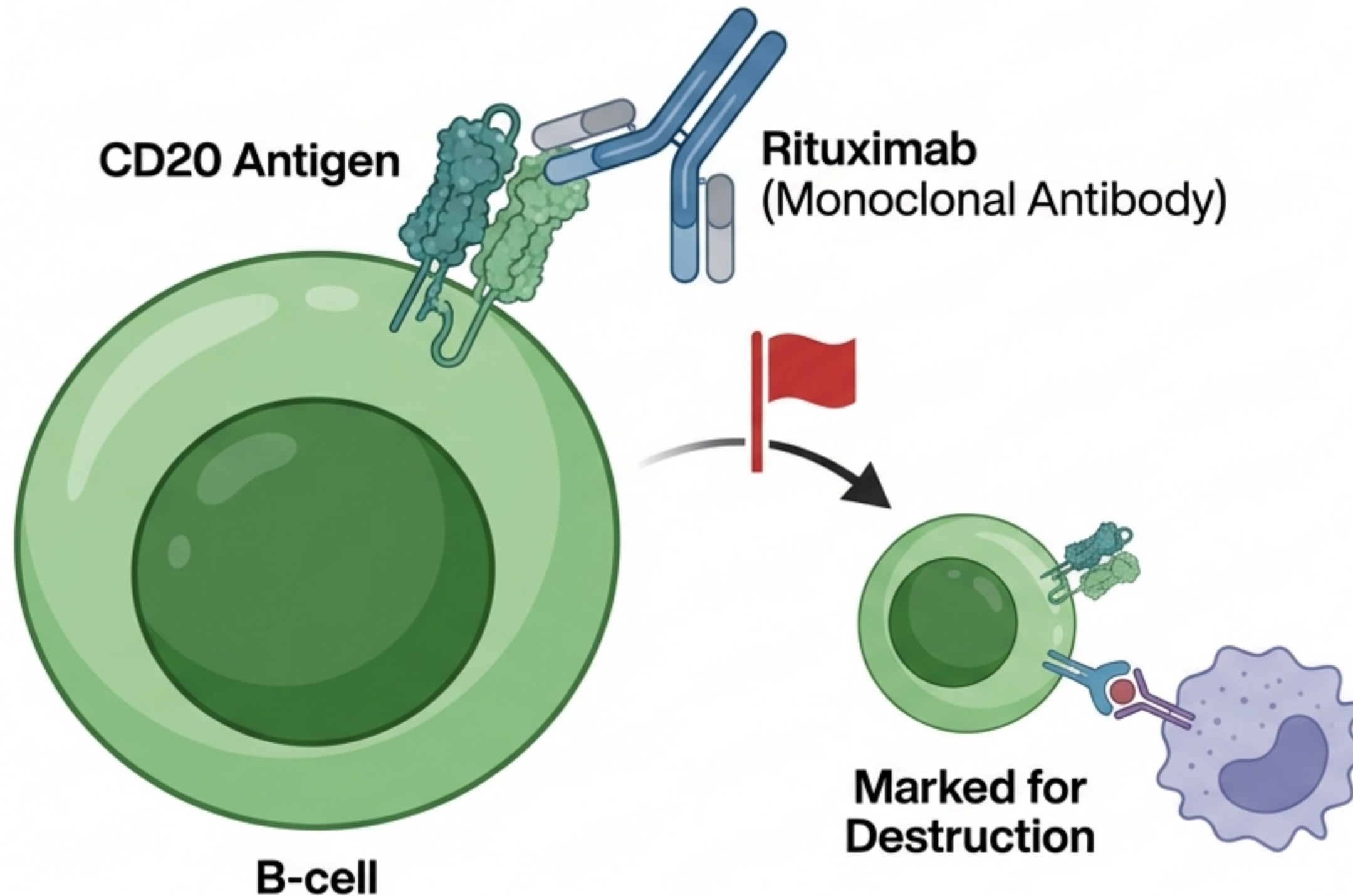
Gold Standard. Preserves architecture.
Result: Accurate WHO Classification.

Staging and Imaging



- PET/CT: Metabolic assessment identifying 'hot spots' of rapid cell division.
- CT Scan: Assess organ involvement (Liver/Spleen size).
- Case Resolution: Imaging confirmed aggressive disease despite initial reactive biopsy.

Therapeutic Strategies: Focus on Immunotherapy



Four Pillars of Treatment

1. Chemotherapy (CHOP)
2. Radiotherapy
3. Immunotherapy (Anti-CD20)
4. Targeted Molecular Therapy

Clinical Takeaways

- ☑ 1. **Definition:** Malignancy of mature lymphocytes arising in lymph nodes or extranodal tissue.
- ☑ 2. **Pathogenesis:** Driven by genetic translocations (e.g., t(14,18)) and immune dysregulation.
- ☑ 3. **Diagnosis:** The “Great Mimicker.” Excisional biopsy is mandatory to assess nodal architecture.
- ☑ 4. **Emergency:** Monitor for Tumor Lysis Syndrome (Hyperkalemia, Hyperuricemia).
- ☑ 5. **Treatment:** Accurate histological classification guides targeted immunotherapy (Anti-CD20).