Lymphoma

There are malignant tumours arising from lymphoid tissue.

classified into
- Hodgkin lymphoma → Presence of Reed Sternberg cell (RS) cells.
- Non-Hodgkin lymphoma → Absence of (RS) cells.

Hodgkin lymphoma

- Named after Thomas Hodgkin.
- Lymphocytes
  - Especially B cells
- Tumour.

Etiology: Genetic Predisposition, Viral Infection (EBV, HIV, Drugs and Chemicals), Unclear though

Pathology

- They spread contiguously
- Rarely extranodal site in beginning
- Presence of Reed Sternberg cells.

Reed Sternberg cells → Large Multinucleated cells where two cells are fused together with nucleus being arranged in mirror image in histological slides.

Looks like "Owl eye"

↳ They don't produce antibodies.
Surrounded by Inflammatory cells (T cells).
Activate Fibroblasts → Make collagen.
Activate Eosinophils.

→ They are clone of neoplastic B-lymphocytes in the germinal center of lymphoid organ → Escaped apoptosis.

Abnormal Rearrangement of Ig Gener.
↓
Divider uncontrollably → Neoplastic.

Ryer classification

1) Nodular Sclerosis 30-40%.
- Most common subtype.
→ Neoplastic cells are surround by collagen by fibroblast and produce nodules.
→ "Lacunar cells" are seen. which looks like spiddle of lake

2) Mixed cellularity 20-30%.
- Second most common.
- Mixed surrounding of cells like neutrophils, eosinophils, lymphocytes, plasma cells, Histocytes.

3) Lymphocyte Predominant 10-20%.
- Surrounded by lymphocytes
- Better Prognosis.

4) Lymphocyte depletion : 10%.
- Dominance of RS cells and depletion of lymphocytes.

Newer classification By WHO

1) Classical Hodgkin lymphoma
→ Dont express CD45 or CD20 in Bcell
→ Express CD15 & CD30
1) NS 2) MC 3) LP 4) LD.

ii) Nodular Lymphocyte Predominant HL

- More common in Men.
- Expresses CD 20 & CD 45, Dont Express CD 15 & CD 30.

→ They are lymphocyte Predominant cells with "lobulated cells" looks like a "Pop corn"

→ Nodules are formed by the lymphocytes.

Clinical Features

1) Painless, Rubbery lymphadenopathy usual in cervical, axillary and mediastinal nodes.
2) Patient develop Pel Ebstein fevers (Come and go).
3) Mediastinal lymphadenopathy causes
   - ↳ Cough and shortness of Breath → Compression of Airway
   - → Hoarseness → Recurrent laryngeal Nerve
   - → Superior Vena Caval syndrome →
   - → Pleural Effusion → By Infiltration into pleural space
4) They release cytokines which reach the kidney and damage Podocytes causing Minimal change Disease
5) Usually 1% of people affected, 2nd decade, Men usually.

Investigations

1) CBC → Normochromic Normocytic Anemia.
   ↑ESR ↑LDH
2) Bone Marrow Trephine Biopsy
3) FNAC
4) Excisional Biopsy
5) Renal Function Test
6) PET / CT is the main investigation. Gold standard.

Ann Arbor staging system:

Stage I ⇒ 1 lymph node
Stage II ⇒ Multiple lymph node on 1 side of diaphragm.
Stage III ⇒ Multiple lymph node on both side of diaphragm
Stage IV ⇒ Metastic - Involving liver or Bone Marrow.

Treatment

- Depends on stage, Age & General health.
- Chemotherapy & Radiotherapy.
- Prognosis - Better than Non-Hodgkin.

Non-Hodgkin lymphoma → Tumor
↓
Lymphocyte.
(B or T cells)
90% 10%
↓
No Reed sternberg cell.

Etiology → Unclear.
⇒ HIV, Ebstein Barr Viruses, HPV, Human T cell lymphotropic Virus, adult T cell. Leukemia lymphoma.
⇒ Chromosomal Translocations.

Pathology → Genetic mutation.

B cell — T cell.
↓
Escape apoptosis.
↓ ↓
Lymph Node (Nodal) More Common
Extranodal
↓
GIT, Bone marrow, Spinal Cord.

① Non-Hodgkin B cell lymphoma → Most common.
↳ Expresses CD 20, can be indolent, aggressive or highly aggressive

① Diffuse Large B cell lymphoma → Most common and aggressive

② Follicular lymphoma → Indolent,
Chromosomal translocation of 14 and 18 t(14:18).
Overexpression of BCL2 which blocks cell death.

③ Burkitt lymphoma → Highly aggressive.
- Chromosomal translocation of 8 and 14 t(8:14)
Overexpression of MYC Gene, which ↑ Cell division

→ In Africa it cause.
→ Extranodal involvement of Jaw.
→ Associated with Epstein Barr Virus (Incorporate DNA of it to Host DNA)
→ Outside africa it cause
→ Extranodal involvement of Abdomen (Illeaeum).
→ Less associated with EBV.

O/E of Microscope:
→ "Starry Sky" → Neoplastic lymphocyte.
↳ Macrophage have eaten some neoplastic cells.

④ Mantle Cell lymphoma → Aggressive.
→ Chromosomal translocation of 14 and 11 t(14:11).
→ Overexpression of BCL1 which promotes cell growth.

⑤ Marginal Cell Zone lymphoma - Indolent.
→ Commonly in Mucosa Associated lymphoid tissue.
→ Nodal & Splenic also present

6) Lymphoplasmacytic lymphoma → Indolent.
→ Involves Bone marrow, lymph nodes, spleen.
→ Neoplastic cells produce Immunoglobulins, M proteins which cause Blood to get thick and virous → Waldenstrom macroglobulinemia.

Non-Hodgkin T cell lymphoma

1) Adult T-cell lymphoma (Leukemia)
→ caused by Human T-lymphotropic Virus (DNA mutation)

2) Mycosis Fungoides:
→ T cell lymphoma of skin looks like fungal infection.
→ O/E of Microscope → "Cerebriform" Nucleus like Brain.

Clinical Features
→ Painless lymphadenopathy, fever, night sweat, weightloss.
→ Extranodal → GI-Bowel obstruction,
Bone marrow → Fatigue, Infection, Easy bruising.
Spinal Cord → Loss of Sensation.
→ Compression syndrome like ascites, SVCS, & GUT obstruction.

Investigation
→ CBC, Bone marrow aspiration Trephine Biopsy, FNAC, Excisional Biopsy, PET/CT,
→ HIV, Hepatitis B, Genotyping. Uric acid levels.

Staging → Same as HL, But usually present in Stage III & IV.

Management → Chemotherapy. Radiotherapy.

Prognosis → Low grade → 12 years.
High grade → Very Low.