Burkitt's Lymphoma

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Biochem 118Q

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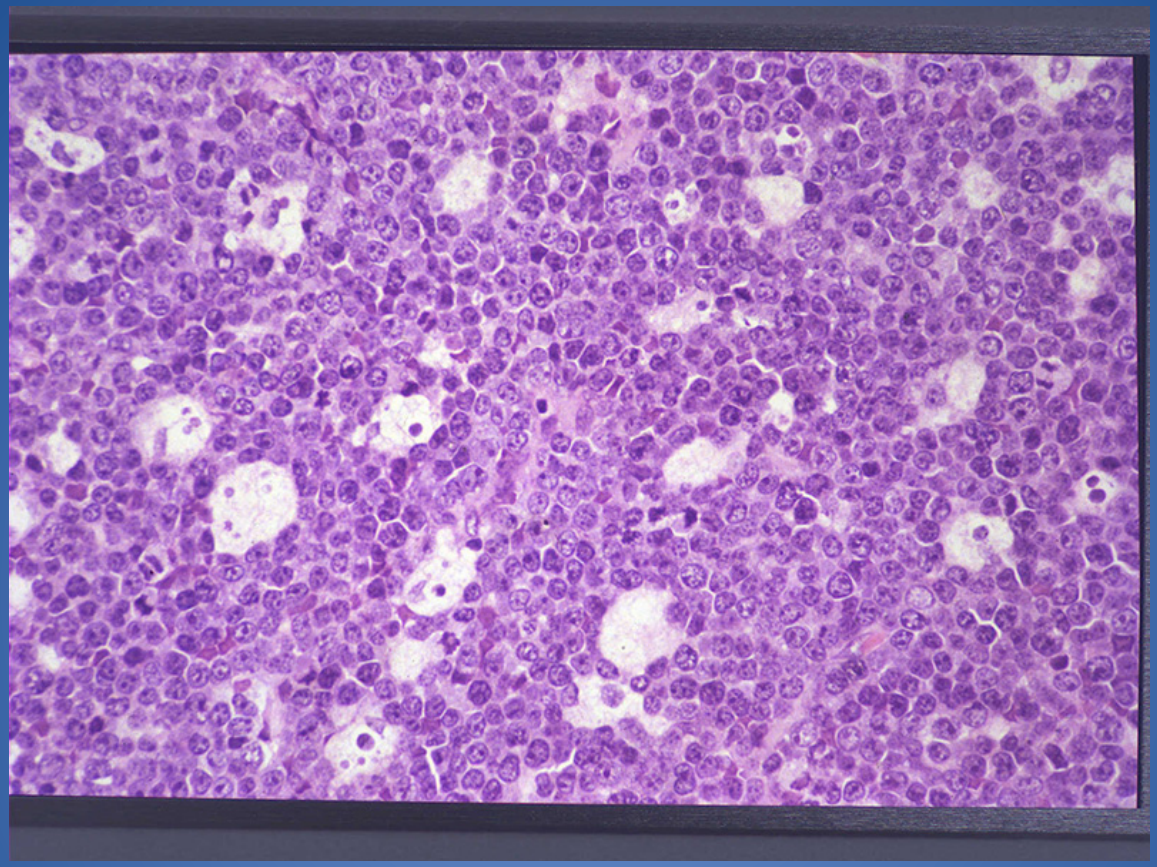
Clinical Types

- Endemic
  - Equatorial Africa
  - 95% Related to Epstein Barr Virus
- Sporadic
  - Rest of the World
  - 30-50% Epstein Barr Virus
- Mostly found in young children

Clinical Presentation

- Endemic
  - Large masses in jaw (maxilla) and other facial bones
  - Also seen in kidneys, breast tissues
- Sporadic
  - Mainly in the small intestine
  - Bone Marrow involvement
- Lymphatic Tissues



Burkitt's Lymphoma Cytology

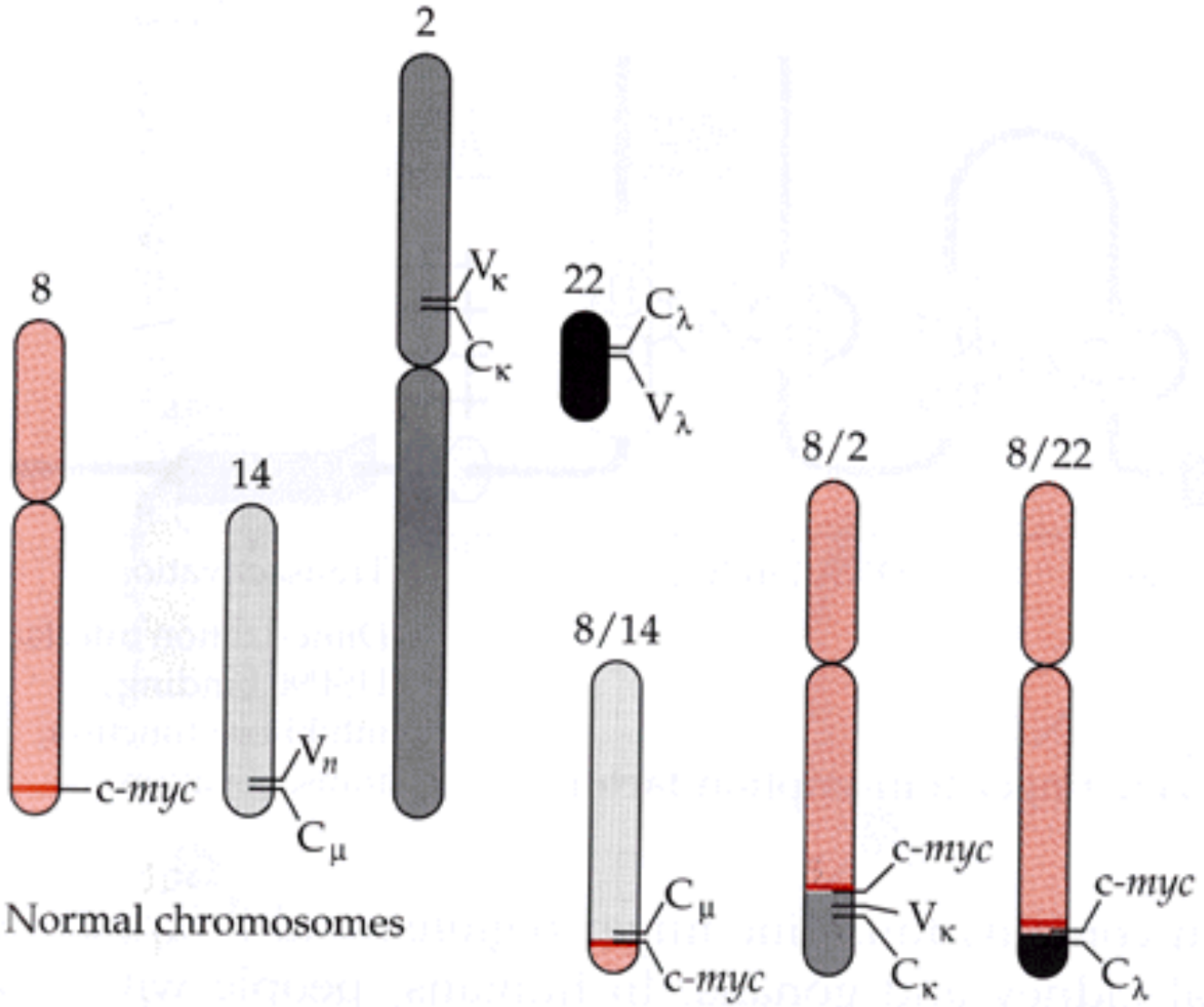
-Scattered Macrophages

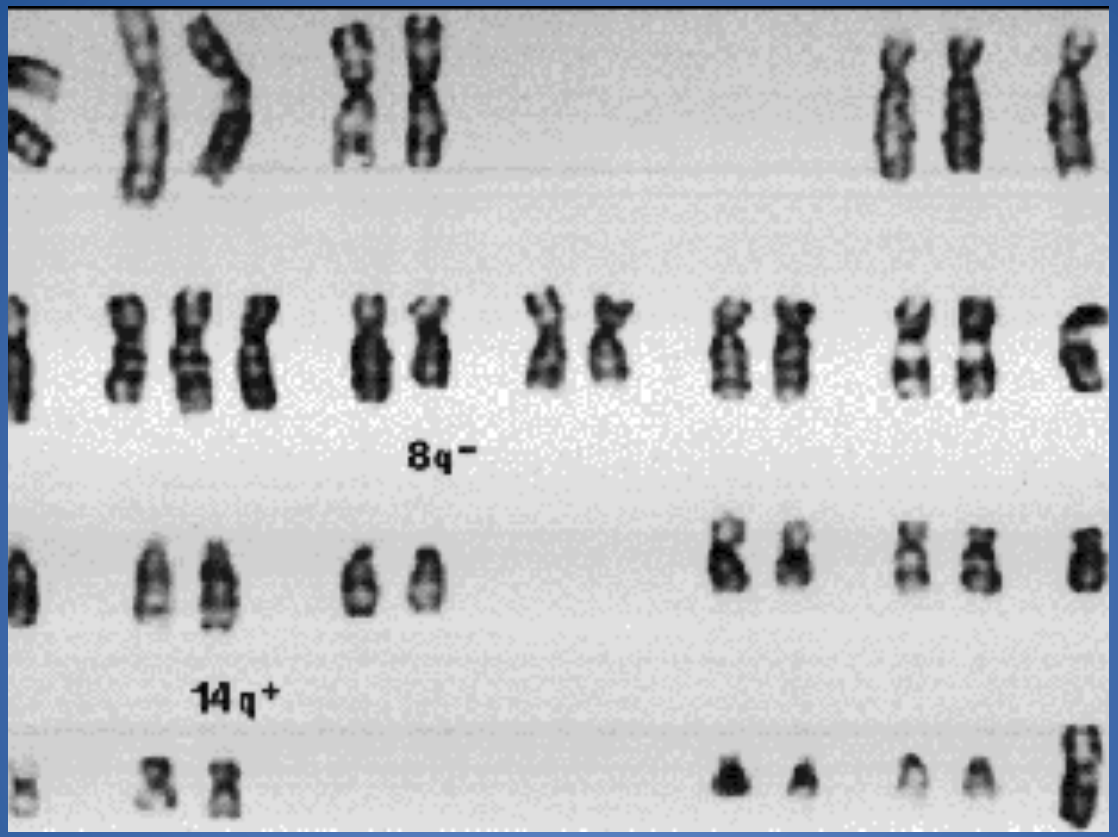
- Cell apoptotic activity

Endemic Burkitt's Lymphoma

C-Myc Translocation

- C-Myc located on 8q 24.12
- Translocation: Rearrangement of chromosomal regions between non-homologous chromosomes
- Chromosome 2p12 (Kappa Light Chain)
- Chromosome 22q24 (Lambda Light Chain)
- Chromosome 14q32 (Heavy Chain)


2
8
V_κ
C_κ
22
C_λ
V_λ
14
c-*myc*
V_n
C_μ
Normal chromosomes
8/2
8/22
8/14
C_μ
c-*myc*
c-*myc*
V_κ
C_κ
c-*myc*
C_λ
Chromosomal translocations moving c-*myc* to immunoglobin gene regions



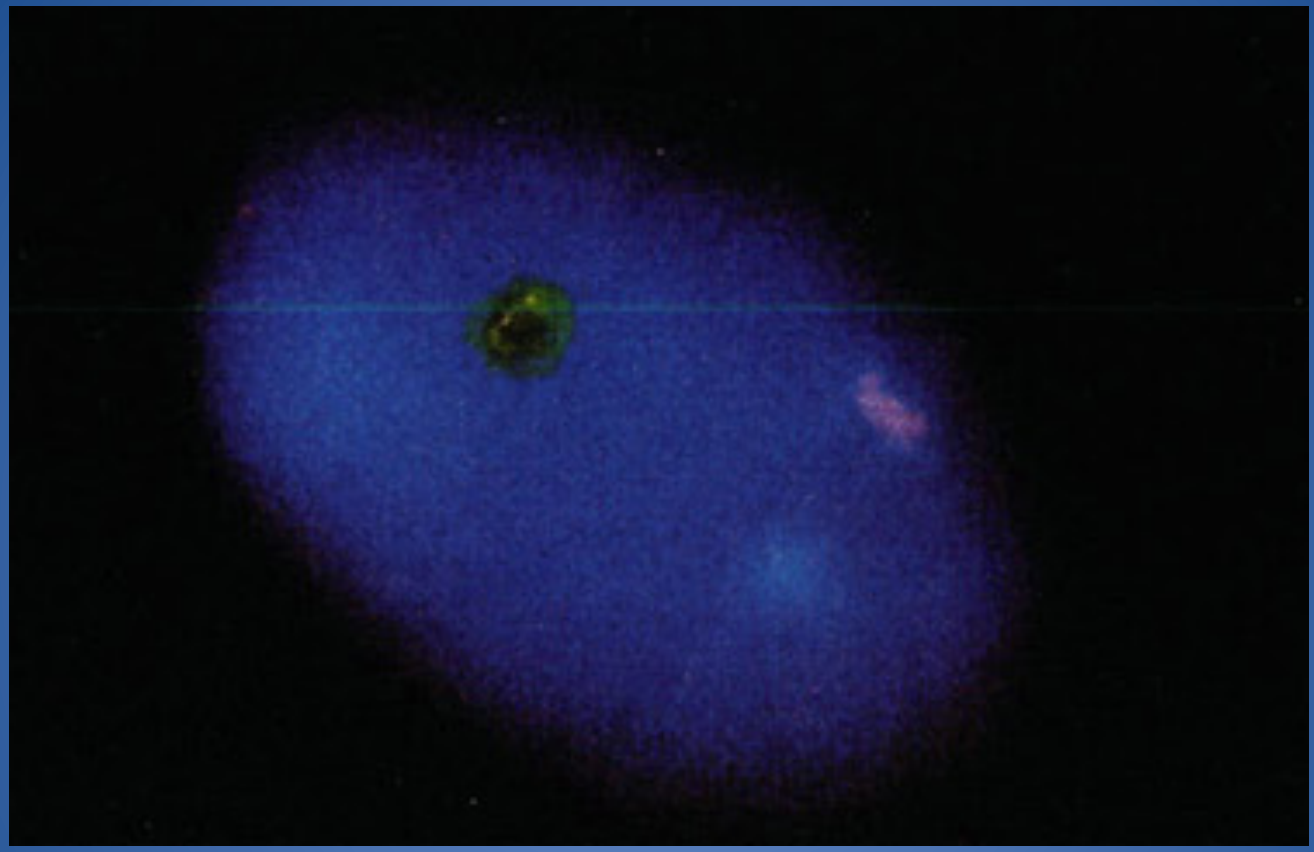
Translocation onto Chromosome 14

Translocation

- Translocation with chromosome 14 brings C-Myc to enhancer region of ImG heavy chain gene
- Increased cell cycling
- Proliferation and disease progression

FISH

- Fluorescent in situ Hybridization
- Used to detect t(8:14) translocation
- Lishner et al: 100% success for 5 Burkitt's Lymphoma cell lines and 5 patients
- Commonly used diagnostic technique



Orange: Rearrangement
Red: C-Myc stain
Green: Immunoglobulin Gene Site

Treatment

- Chemotherapy
- Combination of drugs (Cyclophosphamide, Methotrexate, etc.)
- High-dosage and high intensity

McGrath Protocol

- Most widely used protocol for treatment of Burkitt's Lymphoma
- Combination Chemotherapy targeting cell proliferation
- 90% Remission

Further Studies

- Dave et al: Gene expression profiling of Burkitt's Lymphoma
- C-Myc and C-Myc targets
- BCL2 Translocation
- Hummel et al: Generation of Molecular Signature for Burkitt's Lymphoma
- 58 Unique genes
- BCL6 and CD10

References

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