Pathology

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LYMPH NODES

reactive changes in lymph nodes
causes
• acute non-specific
  – enlarged germinal centers
  – neutrophils (in sinuses)
    ➔ bacterial
  – germinal centers necrosis (abscesses)
• chronic

reactive changes in lymph nodes
causes
• chronic
  – hyperplasia of follicles (➔ B cells)
    • RA
    • toxo
    • HIV (early phase)
  • without disturbances in node structure
  • follicles of different size
  • different lymphocytes
  • macrophages (proliferating)

reactive changes in lymph nodes

• chronic
  – hyperplasia of paracortical zone
    (➔ T cells)
    • EBV
    • vaccination
    • drugs

  • slight changes of the node
  • „para-immunoblasts”

reactive changes in lymph nodes

• chronic
  – sinuses enlargement (➔ macrophages)
    • neoplasms
### Cat-scratch Disease

- **Bartonella (Rochalimaea) henselae**
- **children/teenagers (90% below 18yrs.)**
- **self-limiting**
  - nodes enlargement 2 wks ➔ decreased 2-4 mths
  - follicular hyperplasia
  - hyperplasia of paracortical zone
  - changes in sinuses
  - + sometimes changes in:
    - liver
    - spleen & bones

### Morphology:
- follicular hyperplasia (early stage)
  ➔ sarkoid-like granulomas (in lymph nodes)
  ➔ central necrosis
  ➔ neutrophils (abscesses)

### Actinomycosis

**Def:**
- chronic infection caused by *Actinomyces*
  - most common in head and neck area (after trauma, after tooth extraction)

**Epidemiology:**
- Bacteria could be found on the mucosa or within tonsilar crypts.

**Path:**
- During 1st phase pyogenic infiltration and abscesses formation (with bacterial colonies)
- Then around abscesses develops intensive fibrosis

### EBV

- Infectious ononukleosis (typical)
  - teenager/young adult:
    - fever
    - sorethroat
    - neck lymph node enlargement
    - slight hepatitis
    - in peripheral blood atypical lymphocytes (cytotoxic T CD8+)

### Clinic (+serology)
- Lymph node biopsy NOT needed

- Atypical cases (lymphadenopaty without fever, nor sorethroat, nor splenomegaly)
  ➔ need to exclud lymphoma
  ➔ BIOPSY
<table>
<thead>
<tr>
<th><strong>EBV</strong></th>
<th><strong>Lymphogranuloma venereum</strong></th>
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</thead>
<tbody>
<tr>
<td>• micro:</td>
<td>• STD</td>
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<tr>
<td>– “blurred” lymph node morphology (immunoblasts in sinuses)</td>
<td>• <em>Chlamydia trachomatis</em> (serotypes L1, L2 and L3)</td>
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<tr>
<td>– Follicular hyperplasia, multiple macrophages, high mitoses</td>
<td>• Endemic in tropical areas</td>
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<tr>
<td>– granulocytes</td>
<td>• In Western Europe homosexuals (males)</td>
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<tr>
<td>– Usually without necrosis</td>
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<tr>
<td>– immunoblastic Reed-Sternberg-like immunoblasts</td>
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<td>– CD20+, CD15-, CD30-</td>
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<table>
<thead>
<tr>
<th><strong>Lymphogranuloma venereum</strong></th>
<th><strong>Toxoplasmosis</strong> (Piringer-Kuchinka lymphadenitis)</th>
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<tbody>
<tr>
<td>• 3 phases:</td>
<td>• Common obligate intracellular parasite (<em>Toxoplasma gondii</em>)</td>
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<tr>
<td>– early – small foci of necrosis with neutrophils</td>
<td>• Symptomless infection</td>
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<tr>
<td>– late – “starry” abscesses surrounded by epithelioid cells</td>
<td>• Lymph nodes enlargement (usually posterior neck; young females)</td>
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<td>– abscesses + (fistulas)</td>
<td>• Dangerous in pregnant women</td>
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<tr>
<td>• in macrophages sometimes visible pathogens (in vacuoles)</td>
<td>• From cat feces and raw meet</td>
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<tr>
<th><strong>Toxoplasmosis</strong> (Piringer-Kuchinka lymphadenitis)</th>
<th><strong>THYMUS</strong></th>
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<tbody>
<tr>
<td>• Preserved lymph node structure</td>
<td></td>
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<td>• Enlargement of follicles +:</td>
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<tr>
<td>– Numerous mitoses</td>
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<td>– Numerous apoptotic bodies</td>
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<td>– Small non-caseous granulomas (typically within germinal centers)</td>
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<tr>
<td>• Sometimes giant cells (Langhans type)</td>
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</table>
**myastenia gravis**

- AChR on postsynaptic membrane (auto-Ab)
- • AChR present in normal thymus and on myocytes
  • in thymus may develop ectopic germinal centers (B cells producing pathogenic Ab)

**myastenia gravis**

- Role of T cells (?)
  ➔ damage to myocytes
  ➔ stimulation of B cells (production of auto-Ab)
- thymoma (?)
- Proliferation of thymus stromal cells (?)
- Abnormal and numerous dendritic cells
- Role of TLR-4

**myastenia gravis**

- 10% with other autoimmune disease (G-B, RA)
- autoAb against titin (muscle protein)
- 65% with thymus hyperplasia
- 25% normal thymus
- 10% thymoma
- Risk factors: M 50+ with symptoms
- Develop in 30-45% patients with thymoma (even after years)

**SPLNEEN**

- Mass over 1000g
- causes:
  - CML
  - Gaucher dis.
  - hairy cell leukemia,
  - marginal zone B cell lymphoma,
  - myelofibrosis,
  - plasmacytoma,
  - prolymphocytic leukemia