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Inflammation I - Notes
Tuesday, April 15, 2008  1:00 PM

- Inflammatory Response
  - Vascular response – vasodilation, protein-rich transudate escapes, protein-poor exudate follows, increase in RBC concentration in blood, watch out for hypovolemic shock
  - Cellular response – leukocyte pavemtents & diapedesis, chemotaxis, phagocytosis
    - Timeline: PMNs (1-2 days), then macrophages (3 days), then later fibroblasts (5 days – 2 weeks) --> lay down fibrin & vessels

- White Blood Cells
  - Granulocytes – include neutrophils (PMNs), eosinophils, basophils
    - PMNs - lobulated nucleus
    - Macrophages - round, bean shaped nucleus; stuff in cytoplasm
  - Monocytes – activate to form macrophages
  - Lymphocytes – T cells, B cells (T & B have huge "naked" nucleus), plasma cells (eccentric nucleus & “hof”)

- Margination: Occurs when PMNs stick to vessel wall and diapedesis to site of injury --> can see surrounding vessel walls

- Exudate
  - Exudate – inflammatory extravascular fluid possibly having plasma proteins, leukocytes, cell derbis, H2O
  - Non-cellular Exudates – Serous & Fibrinous
    - Serous – occurs in noninfectious setting, no cells, fluid has protein. Ex: blister, alveolar fluid
    - Fibrinous – fibrogen escapes from venules, forms fibrin (clot mesh), detect as heart/pleural rub
      - Seen as fibrin on pleural or serosal (outer) surface, can hear heart rubbing
  - Cellular Exudates – Purulent, Suppurative, Phlegm
    - Purulent – PMNs streaming through tissue without destruction; tissue may appear spread apart
      - Examples: purulent pneumonia, purulent meningitis, acute appendicitis
    - Suppurative (pus) – PMNs streaming through tissue with destruction (liquefactive necrosis)
      - Localized suppuration = abscess (liquefactive necrosis)
      - Due to infection of some sort, usually
      - Staph infection --> polypp --> abscess w/ pus
      - Examples: appendicitis with necrosis and suppuration – can’t recognize tissue
      - Also myocardial infarction – see coagulative necrosis with encroaching suppurative
    - Cellulitis/Phlegmonous – diffuse streaming of PMNs through tissue (type of purulence)
      - Occurs on skin and subcutaneous tissue, example is bacterial infection spreading
      - Need clinical history and physical exam
  - Mixed Exudates
    - Fibrinopurulent – neutrophils and fibrin; example – leaky abdomen & peritonitis
    - Mucopurulent – neutrophils and mucus only on mucous membranes
      - Example – cystic fibrosis of respiratory tract
      - Squamous cell carcinoma --> dilated bronchus fills w/ mucopurulent exudate
    - Pseudomembranous – fibrinopurulent “membrane” adherent to partially necrotic tissues
      - Only on mucous membranes!
      - Example – Pseudomembranous colitis – mucus diarrhea, membrane rubs off, bleeding
        - Extended antibiotic therapy --> C. difficile takes over --> colitis
        - Treat w/ vancomycin or metronidazole

- PMNs vs. Lymphocytes (seen from lower power, not histo like view)
  - PMNs are fragmented, smaller, more irregular shape
  - Lymphocytes are larger, more regular shape

- Granulomatous Inflammation (Granuloma)
  - Injury --> acute inflammation --> chronic inflammation --> mature granuloma --> epithelioid (modified macrophages) granuloma --> complex granuloma
  - A chronic inflammation formed by undigested material
  - Often involves TB (caseating) granuloma, foreign body granuloma, lipogranuloma
    - Caseating has no clear center, foreign body has an obvious central body (maybe a hair)
  - Surrounded by macrophages and GIANT CELLS
  - Can 1) persist forever, 2) resolve leaving scar/cavity, dystrophic calcification