American College of Surgery Critical Care Review Course

Transplant

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2012 Clinical Congress
Presenter Disclosure Slide

American College of Surgeons ♦ Division of Education

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Nothing To Disclose

Time Allotment:

AMERICAN BOARD OF SURGERY

SURGICAL CRITICAL CARE: CONTENT OUTLINE FOR THE CERTIFYING AND RECERTIFICATION EXAMINATIONS

XVII.	**Immunology, Transplantation, and Cell Biology**	**4%**

- Percentage of time allotted to review the critical care of transplant patients:

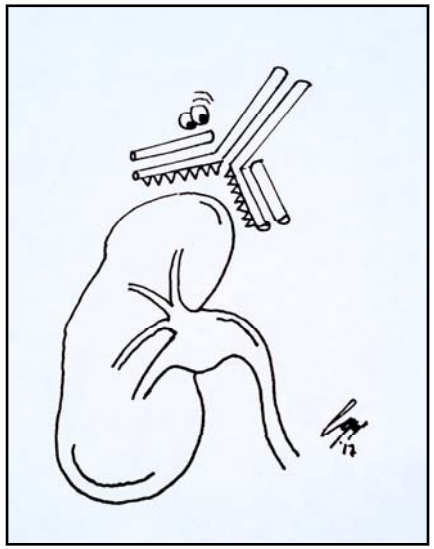
3.3%

Focus:

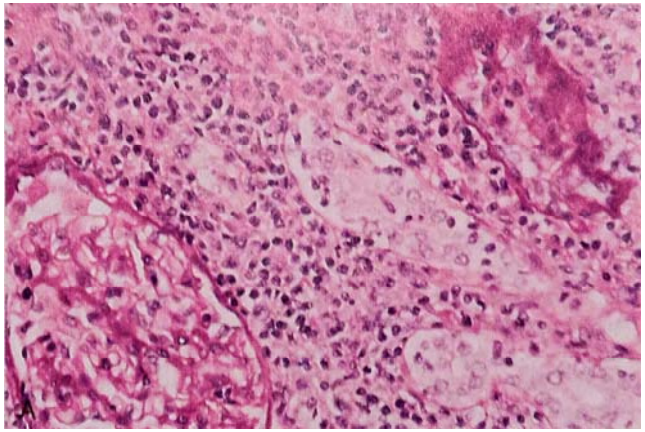
Transplant Complications Managed in the ICU

Rejection:

- Hyperacute
  - Recipient antibodies versus cellular components of graft
  - Evident in operating room (cardiac/kidney)
  - Dx: Thrombosis of organ in OR
  - Rx: Re-transplant



- Acute
  - T Lymphocyte infiltration, Tissue disruption and blood vessel injury
  - Evident in days to months
  - Dx: Clinical evidence of organ dysfunction, Biopsy
  - Rx: Increase immunosuppression, pulse dose steroids, antilymphocyte antibodies



Kotran RS et al. Robbins Pathologic basis of disease. 6th edition. Philedelphia PA:WB Saunders, 1999, Pg. 209.

Rejection:

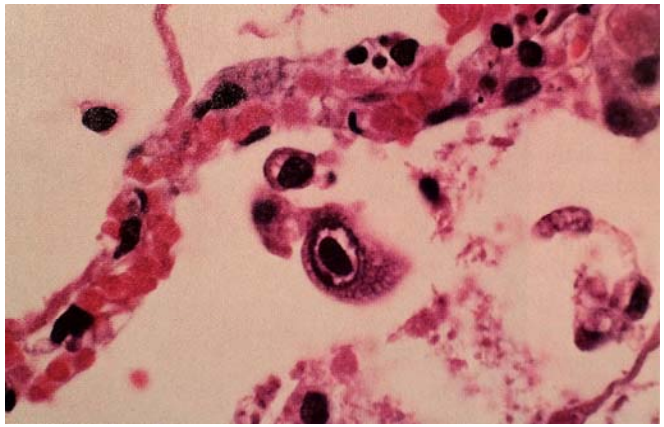
- Chronic:
  - Results in fibrosis and ongoing organ dysfunction
    - Kidney: Chronic renal failure
    - Pancreas: Insulin dependent diabetes
    - Liver: Cirrhosis
    - Lung: Bronchiolitis obliterans syndrome
    - Heart: Chronic allograft vasculopathy
  - Evident in months
  - Dx: Clinical evidence of organ dysfunction, Biopsy
  - Rx: Possible re-transplant depending on organ

Question:

- Which of the following pathogens can produce clinical manifestations such as encephalitis, myocarditis, enteritis, nephritis, and pancreatitis in kidney transplant patients?
  - A. Cytomegalovirus
  - B. BK virus
  - C. Pneumocystis jirovecii
  - D. Epstein-Barr Virus

Infection:

- Cytomegalovirus:
  - Presentation: Fever, leukopenia, gastroenteritis, pneumonitis, thrombocytopenia
  - Dx: Antigenemia by immunofluorescence; PCR
  - Rx: Valganciclovir or ganciclovir, supportive care



Kotran RS et al. Robbins Pathologic basis of disease. 6th edition. Philedelphia PA:WB Saunders, 1999, Pg. 376.

Infection:

- Pneumocystis jirovecii Pneumonia:
  - Presentation: Fever, cough, severe dyspnea, leukopenia, bilateral infiltrate on CXR
  - Dx: Sputum or Bronchoalveolar lavage with Wright-Giemsa Stain (trophozoite detection)
  - Rx: Bactrim

Squire LF, Novelline RA. Fundamentals of Radiology. 4th Edition Cambridge, MA: Harvard University Press, 1988, Pg. 57.

Infection: Renal Transplant

- BK Virus
  - Presentation: Elevating creatinine, Graft dysfunction to loss
  - Dx: Blood and urine viral screening, Biopsy
  - Rx: Staged reduction in immunosuppression (Calcineurin inhibitors and/or MMF)

Infection: Liver Transplant

- Hepatitis C Recurrence
  - Presentation: Fever, jaundice, elevated LFTs, elevated viral load
  - Dx: Liver biopsy with trichrome staining
  - Rx: Interfuron +/- ribavirin, immunosuppression adjustment, re-transplant

Infection: Lung transplant

- Pneumonia:
  - Bacterial: P. aeruginosa, Staphylococcus aureus
  - Viral: Cytomegalovirus
  - Fungal: Aspergillus
  - Dx: CXR, hypoxemia, sepsis, airway necrosis (fungal)
  - Rx: Targeted antibiotic for bacteria; Ganciclovir vs. valganciclovir for CMV; Voriconazole in Aspergillus; Decrease immunosuppression

Question:

- What immunosuppressant has been associated with an increased incidence of airway dehiscence in lung transplant?
  - A. Mycophenolate Mofetil
  - B. Sirolimus
  - C. Basilixamab
  - D. Tacrolimus

Immunosuppressant complications:

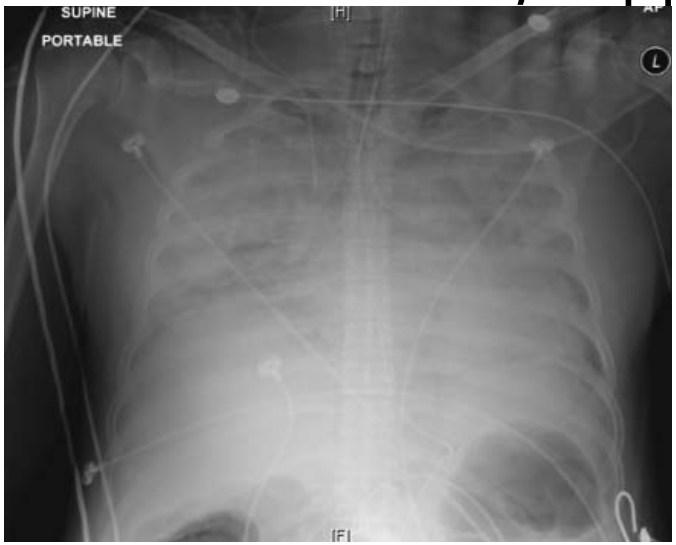
- Calcineurin inhibitor toxicity
  - Presentation: Nephrotoxicity, neurotoxicity, hepatotoxicity
  - Dx: Elevated blood levels
  - Rx: Hold immunosuppression, follow blood markers of organ function, supportive care

Immunosuppressant complications:

- Drug-Drug interactions
  - CYP3A4 inhibitors (can lead to immunosuppressant toxicity)
    - Diltiazem, Verapamil, Amiodarone, Erythromycin, Azole antifungals, Micafungin, Caspofungin, Protease inhibitors, ciprofloxacin
  - CYP3A4 inducers (can lead to decreased immunosuppressant levels)
    - Phenobarbital, Phenytoin, Carbamazepine, Rifampin

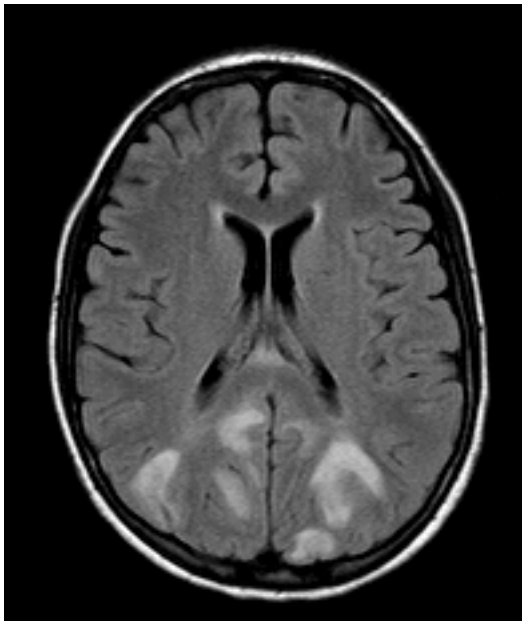
Immunosuppressant complications:

- Cytokine release syndrome
  - Pulmonary edema, fevers, rigors, bronchospasm
  - Dx: Sudden onset hypoxia, dyspnea, CXR: bilateral acute infiltrates
  - Rx: Severe cases: Intubation, supportive care



Immunosuppressant complications:

- Posterior Reversible Encephalopathy Syndrome (PRES)
  - Calcineurin related neurotoxicity
  - Presentation: Altered mental status, headache, HTN, focal neurologic deficits, visual changes, seizures
  - Dx: Cortical or subcortical areas of edema on MRI
  - Rx: Reduce or discontinue calcineurin inhibitors, avoid hypomagnesemia, control HTN



http://neuropathology-web.org/chapter2/chapter2cCerebralhemorrhage.html

Questions?