Diagnosis of Antibody-Mediated Rejection (AMR)  
- Endomyocardial biopsy is now considered the standard approach to diagnose AMR  
  - Routine biopsy surveillance is standard practice as symptoms are often vague  
  - Biopsy evaluates:  
    - Histologic findings  
    - Activated macrophages  
    - Intravascular mononuclear cells  
    - Immunohistologic findings  
    - Complement and T-cell deposition  
  - Lack of specific antibodies is not necessarily required for diagnosis of AMR  
  - May impede aggressiveness of treatment

Pathologic AMR (pAMR) Classification  
- pAMR0 – Negative for pathologic AMR  
- pAMR1(+) – Immunopathologic findings positive and histological findings negative  
- pAMR2 – Histopathologic and immunopathologic findings are positive  
- pAMR3 – Severe AMR with histological findings including interstitial hemorrhage, capillary fragmentation, mixed inflammatory infiltrates, and marked edema associated with profound hemodynamic dysfunction and poor clinical outcomes  

Rituximab in the Treatment of AMR  
- Pharmacology  
  - Monoclonal antibody that binds to CD20 antigen, found predominantly on pre-B and mature B lymphocytes  
  - CD20 regulates early steps in the activation process for B cell cycle initiation and differentiation  
  - Hypothetical Use for AMR  
    - Causes a profound depletion of B cells  
    - Attenuates the production of antibodies against HLA, leading to decreased rejection episodes  
  - Evidence for Use  
    - Number of case reports and case series have been published regarding the use of rituximab post kidney transplant for the treatment of AMR, most of which showing positive outcomes  
    - No prospective studies published at this time  
    - Few studies have investigated the use of rituximab in the setting of AMR post kidney transplant  

Rituximab for the Treatment of AMR post kidney transplant  
- Many institutions do include rituximab as an option for treatment of AMR  
- At this time, there are no consensus recommendations about which agent or combination of agents should be used as initial treatment  
- Treatment options are aimed at reducing the presence of donor-specific antibodies  
  - Asymptomatic AMR treatment options  
    - Pulse steroids (oral)  
    - Intravenous immunoglobulin (IVIG)  
    - Targeting higher tacrolimus or cyclosporine levels  
    - Asymptomatic AMR treatment options  
    - IV steroids  
    - Mycophenolate mofetil  
    - Intravenous antithymocyte globulin  
    - Rituximab  
  - Severe AMR  
    - Bortezomib  
    - Other treatments  

Heart and Kidney Transplant  
- Patient received transplants of both organs May 2013  
- Overall peri-operative course was uncomplicated  
- Patient received basiliximab and methylprednisolone (intra-operative)  
- On post-operative day (POD) 1 the patient experienced witnessed cardiac arrest and was quickly resuscitated  

Rituximab Treatment for Antibody-Mediated Rejection (AMR)  
- Following Heart and Kidney Transplant  

Post Operative Clinical Course  
- 2 patients  
- 12 patients  
- 50% for high dose IVIG alone  
- 37.1% graft survival with rituximab and high dose IVIG compared to 50% for high dose IVIG alone

CONCLUSION  
- Rituximab was effective in treating AMR in this patient  
- The growing data on the use of rituximab for AMR may have important implications for the design of treatment regimens in patients with heart and kidney transplants  

REFERENCES  

DISCLOSURES  
- Laura A. Falconieri: Nothing to disclose  
- Cheryl A. Abbas: Nothing to disclose