Ureteral Stent Placement and BK Viremia following Kidney Transplantation

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Background

• BK Virus is ubiquitous - 80-90% of the population have been exposed by the time they reach adulthood

• Activation and low-level replication with asymptomatic viruria (detectable in urine) occurs in 5% of healthy individuals.

• The prevalence of asymptomatic viruria (detectable in urine) may increase with kidney transplantation to more than 60%

• Prevalence of BK viremia (detectable in blood) within 1 year after transplantation is approximately 20%

• BK nephropathy is a common cause of renal allograft dysfunction with incidence ranging from 1-10% during the first 12 months post-transplant
BK Virus Study - Design

• We investigated the hypothesis that placement of indwelling stents is an independent risk factor for development of BK viremia
  • Two prior single center studies demonstrating correlation
    • Thomas et al. Transplantation 2007, Johns Hopkins (20 cases with 46 controls)
    • Siparsky NF, et al Transplant Proc. 2011, Albany Medical Center (186 recipients with 124 ureteral stent placement, 62 did not undergo stenting)

• We performed single center retrospective study of renal transplants from Sept 1, 2009 to Aug 31, 2012 at Virginia Mason.

• Our Screening protocol: BK Virus PCR quant in BLOOD at 30, 60, 90, 180, 270 and 365 days post-procedure
BK Virus Study – Design

• A transplant ureteral stent was placed at the discretion of the surgeon.
• Our standard practice was for removal of ureteral stent at 1 month post-transplant.
• Immunosuppression protocol:
  • Induction with either basiliximab or rabbit anti-thymocyte globulin.
  • All patients received standard maintenance immunosuppression regimen of tacrolimus, mycophenolate mofetil (or mycophenolic acid), and corticosteroids.
BK Virus Study - Results

• 231 recipients identified during study period
• 159/231 (68.8%) received ureteral stents
• 72/231 did not receive ureteral stents (31.2%)
• A total of 36 cases of BK Viremia were identified (15.6%)
• Of which 32/36 cases of viremia were stented (89%)
• 4/36 cases of viremia were not stented (11%)
• 32/159 (20%) of the stented recipients had BK Viremia
• 4/72 (5.6%) of the non-stented recipients with BK Viremia
• Odds ratio of ureteral stent placement being associated with BK Viremia was 4.16, p=0.0001
Intervention

• Protocol change in our program to remove ureteral stents within 2 weeks of transplant