Characterization of urinary tract infections post-renal transplant
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Background

• Urinary tract infections (UTIs) are the most common infectious complication post-renal transplant
• Estimated rate of UTI post-renal transplant between 6-86%
• UTIs post-transplant are associated with risk for graft loss and death
• Variations exist in of asymptomatic bacteriuria (ASB) treatment practices at Cleveland Clinic Main Campus (CCMC)
• Increased risk for multi drug resistant (MDR) infections due to factors such as immunosuppression and instrumentation

Objectives

Primary Objective: Summarize the incidence of UTI and timing of UTI post-transplant
Secondary Objectives: Characterize microbiological trends
• Classify and compare post-transplant positive urine cultures
• Identify risk factors for developing MDR UTI post-transplant

Methods

Study Design: Non-interventional, retrospective, cohort study
Study Period: September 1, 2012 to October 1, 2016
Inclusion Criteria: Adult patients receiving an isolated renal transplant

Results

Primary Outcome: 1 year incidence of UTI post-transplant
Secondary Outcomes: 1 year incidence of asymptomatic bacteriuria post-transplant
• 1 year incidence of recurrent UTI post-transplant
• 1 year incidence of relapsed UTI post-transplant
• Time to first UTI post-transplant
• Antimicrobial susceptibility patterns of urinary isolates identified
• Presence or absence of potential risk factors for MDR UTI
• Development of UTI after ASB

Cultures with ≥105 CFU/mL of bacteria, will be assessed for microbiological purposes but excluded from UTI Outcomes

MDR bacteria
• Gram-negative bacilli with in vitro resistance to at least one agent in 3 different classes of antimicrobials
• Vancomycin-resistant Enterococcus (VRE)

MDR UTI
• 2 or more UTIs within 6 months or 3 or more UTIs within 12 months post-transplant

Relapsed UTI
• UTI occurring after an episode of ASB with the same organism, at any time during the study period

ASB to UTI Progression
• UTI occurring after an episode of ASB with the same organism, at any time during the study period

ASB to UTI progression

<table>
<thead>
<tr>
<th>Time to first UTI post-transplant (months)</th>
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<tbody>
<tr>
<td>0-3</td>
<td>100</td>
</tr>
<tr>
<td>4-6</td>
<td>150</td>
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<td>7-12</td>
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<tr>
<td>13-18</td>
<td>50</td>
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<td>19-24</td>
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ASB Treatment

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<td>Ampicillin</td>
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<tr>
<td>Ciprofoxacin</td>
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<td>Vancomycin</td>
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MDR Risk Factors

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<td>Age</td>
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<tr>
<td>Gender</td>
<td>100</td>
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<tr>
<td>UTI treatment</td>
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<td>Comorbidities</td>
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Outcomes

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<tr>
<td>UTI</td>
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<tr>
<td>ASB</td>
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<tr>
<td>Recurrent UTI</td>
<td>25</td>
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<tr>
<td>Relapsed UTI</td>
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Discussion

• One-year incidence of symptomatic UTI lower than previously reported studies
• Female gender, recurrent UTI, and receipt of IV antibiotics increased risk for MDR bacteriuria which has not been previously published to our knowledge
• High rates of ciprofloxacin resistance were identified
• Asymptomatic bacteriuria was treated often
• No difference was seen in rates of progression form ASB to UTI which is consistent with the prior study
• Consider that ASB may not require treatment when occurring after the first month following transplantation

References


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