**Fidaxomicin and Vancomycin for Recurrent Clostridium difficile Colitis: Retrospective Case-control Study in a Single Institution**

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**Background**

- *Clostridium difficile* is an anaerobic gram positive, spore forming bacillus, which has emerged as a major nosocomial pathogen.
- *C. difficile* is able to cause an infectious colitis in humans through the production of toxins: Toxin A (TcdA) and Toxin B (TcDB).
- A hypervirulent strain of *C. difficile*, NAP1/BI/027, produces high levels of TcdA and TcDB and has higher recurrence rate, morbidity, and mortality.1
- Infections with *C. difficile* have become increasingly prevalent with increased use of antibiotics.
- In 2011, over 450,000 cases of *C. difficile* infection (CDI) were documented with over 20,000 related deaths.2
- Based on the 2010 IDSA guidelines, first line therapy for severe CDI is oral vancomycin.3
- May 2011, Fidaxomicin was approved by the Food and Drug Administration (FDA) for treatment of CDI.6
- Fidaxomicin is a poorly absorbed, narrow spectrum macrocyclic antibiotic.
- It has shown to be as effective as oral vancomycin in the treatment of CDI, and possibly better in terms of reducing recurrence in non-NAP1/BI/027 strains.9

**Objectives**

1. Compare the recurrence rate of CDI between patient who received oral vancomycin and patients who received fidaxomicin at Stony Brook University Hospital (SBUH)
2. Compare 90-day mortality due to CDI between patients who were treated with oral vancomycin and fidaxomicin

**Methods**

- A retrospective medical chart review was performed from 2011-2015 to identify all hospitalized patients who received fidaxomicin and vancomycin for CDI.
- Inclusion criteria were the following: patient ≥ 18 years old, stool positive for *C. difficile* by PCR, and ≥10 days oral treatment with either fidaxomicin (tested group) or vancomycin (control group).
- Clinical recurrence was defined by diarrhea positive for *C. difficile* toxin B gene that required retreatment for CDI within 90 days of cessation of therapy

**Results**

- Total of 55 cases in fidaxomicin (F) group and 74 cases in Vancomycin (V) group met inclusion criteria.
- Data comparison between two groups are as follows:

**TABLE 1: Patient demographics and outcomes**

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Fidaxomicin</th>
<th>Vancomycin</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yr)†</td>
<td>65.9 ± 1.88</td>
<td>63.7 ± 1.86</td>
<td>0.4</td>
</tr>
<tr>
<td>Male (%)</td>
<td>52.7%</td>
<td>51.4%</td>
<td></td>
</tr>
<tr>
<td>Median Length of hospitalization</td>
<td>14</td>
<td>9</td>
<td>0.6</td>
</tr>
<tr>
<td>Immunocompromised†</td>
<td>36.4%</td>
<td>36.5%</td>
<td>0.9</td>
</tr>
<tr>
<td>More than 1 episode of CDI</td>
<td>61.8%</td>
<td>59.5%</td>
<td>0.8</td>
</tr>
<tr>
<td>Use of antibiotic during last 30 days</td>
<td>71%</td>
<td>74.3%</td>
<td>0.7</td>
</tr>
<tr>
<td>Received additional anti CDI therapy</td>
<td>29.1%</td>
<td>24.3%</td>
<td>0.5</td>
</tr>
<tr>
<td>CDI recurrent rate</td>
<td>40%</td>
<td>24%</td>
<td>0.057</td>
</tr>
<tr>
<td>90-day mortality rate</td>
<td>10.5%</td>
<td>4.1%</td>
<td>0.13</td>
</tr>
</tbody>
</table>

**Graph: Comparison of F group and V group on outcomes events**

**Discussion**

- In our study, we found a relatively high rate of recurring CDI (40%) in F group compared to (24%) in V group, despite demographic variables being similar in both groups.
- In V group, we included all dosages (125mg, 250mg, 500mg, and prolonged taper courses).
- Out of 74 cases in V group, 15 (20%) patients received a vancomycin tapering dose.
- It is unclear if Vancomycin tapering doses reduced CDI recurrence and mortality rate in the V group.

**Conclusion**

- Our retrospective analysis showed a higher rate of recurrence of *C. difficile* colitis and 90-day mortality in the F group compared to V group.
- Fidaxomicin is not superior to vancomycin in reducing recurrent CDI in similar populations at a tertiary medical center.
- Future studies will need to be conducted to compare the patients who received different vancomycin doses, vancomycin taper doses, and fidaxomicin.

**Special Acknowledgements**

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**References**