Clinical Outcomes for Impella Patients Associated with Hyperlipidemia: An Analysis of the National Inpatient Sample

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Clinical Outcomes for Impella Patients Associated with Hyperlipidemia: An Analysis of the National Inpatient Sample

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Background

- Impella is a percutaneously inserted ventricular assist device that has been widely used in patients with severe heart failure complicated by cardiogenic shock.1
- There is limited data available on the impact of hyperlipidemia on Impella patients.

Methods

- National Inpatient Sample (NIS): 2019 and 2020
- International Classification of Diseases 10th revision codes
- Hospitalizations of Adult Impella Patients (8,233 patients)
- Multivariate logistic used to adjust for confounders

Aim

- We sought to examine the national inpatient sample database to describe in-hospital outcomes among these patients.

Results

- This study included 8233 Impella patients, of which 1012 (12.3%) patients had hyperlipidemia.
- Impella patients with hyperlipidemia had higher prevalence of hypertension (30.2% vs 29.1%, P < 0.001), diabetes mellitus (21.6% vs 15.6%, P < 0.001), and chronic kidney disease (9.1% vs 8.0%, P < 0.001) compared to Impella patients without hyperlipidemia. In-hospital mortality was higher among those with hyperlipidemia (7.2% vs 6.0%, P < 0.001).
- Multivariate regression showed that those patients had higher inpatient mortality (OR 1.884, 95% CI 1.815-1.954, P < 0.001) in addition to paying significantly more total hospital charges ($251,419 vs $225,969, P < 0.001). The mean length of stay (LOS) was longer among the Impella patients with hyperlipidemia (12.4 days vs 10.5 days, P < 0.001).
- On secondary analysis it has shown that those patients had higher odds of having acute kidney failure (OR 2.008, 95% CI 1.946-2.072, P < 0.001), ventricular arrhythmia (OR 1.913, 95% CI 1.847-1.981, P < 0.001), stroke (OR 2.865, 95% CI 2.618-3.134, P < 0.001), deep vein thrombosis (DVT, OR 1.689, 95% CI 1.544-1.848, P < 0.001), and sepsis (OR 1.786, 95% CI 1.711-1.865, P < 0.001) compared to Impella patients without hyperlipidemia.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Hyperlipidemia (n = 1012)</th>
<th>No Hyperlipidemia (n = 7221)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension (%)</td>
<td>30.2</td>
<td>29.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Diabetes Mellitus (%)</td>
<td>21.6</td>
<td>15.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Chronic Kidney Disease (%)</td>
<td>9.1</td>
<td>8.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>In-Hospital Mortality (%)</td>
<td>7.2</td>
<td>6.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total Hospital Charges ($)</td>
<td>$251,419</td>
<td>$225,969</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Length of Stay (days)</td>
<td>12.4</td>
<td>10.4</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Table 1. Comparison of prevalence of various outcomes in Impella patients with and without hyperlipidemia.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-Hospital Mortality</td>
<td>1.884</td>
<td>(1.815 – 1.954)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Acute Kidney Failure</td>
<td>2.008</td>
<td>(1.946 – 2.072)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Ventricular Arhythmia</td>
<td>1.913</td>
<td>(1.847 – 1.981)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Stroke</td>
<td>2.865</td>
<td>(2.618 – 3.134)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Deep Vein Thrombosis</td>
<td>1.689</td>
<td>(1.544 – 1.848)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sepsis</td>
<td>1.786</td>
<td>(1.711 – 1.865)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Table 2. Associations between various conditions and hyperlipidemia among Impella patients.

Conclusion

- In this nationally representative population-based retrospective cohort study, hyperlipidemia was associated with higher mortality and worse outcomes among Impella patients.

References