The Risk of Adverse Coronary Events is Higher in Patients with Severe Obstructive Sleep Apnea Following Percutaneous Coronary Intervention

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**BACKGROUND**

- Obstructive sleep apnea (OSA) is associated with episodic hypoxemia, catecholamine surges and changes in intrathoracic pressure that can adversely affect cardiovascular hemodynamics and promote adverse cardiac remodeling.
- OSA is associated with increased morbidity and mortality in patients with cardiovascular diseases.
- Limited data is available on the impact of obstructive sleep apnea (OSA) or continuous positive airway pressure (CPAP) therapy on coronary events or mortality in patients undergoing percutaneous coronary intervention (PCI).

**STATISTICAL ANALYSIS**

- Wilcoxon, Chi square test and Kaplan-Meier analysis were used to compare outcomes between patients with severe versus non-severe OSA.
- Predictors of composite and individual end points were determined using proportional hazard cox model.

**RESULTS**

- The cohort consisted of 222 patients (mean age 63.2±11.3 years, 70% male).
- 39% had severe OSA, 61% non-severe OSA.

**TABLE 1: DEMOGRAPHICS**

<table>
<thead>
<tr>
<th></th>
<th>Overall (N=222)</th>
<th>Non-Severe (N=136)</th>
<th>Severe (N=86)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean ± SD years</td>
<td>63.2±11.3</td>
<td>63.2±11.2</td>
<td>63.2 (11.6)</td>
<td>0.64</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>35</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>136</td>
<td>101</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>BMI, mean ± SD kg/m²</td>
<td>35.2±7.7</td>
<td>34.9±7.6</td>
<td>35.7±6.6</td>
<td>0.41</td>
</tr>
<tr>
<td>Atrial Fibrillation</td>
<td>28</td>
<td>27</td>
<td>30</td>
<td>0.63</td>
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<tr>
<td>CHF</td>
<td>41</td>
<td>37</td>
<td>48</td>
<td>0.11</td>
</tr>
<tr>
<td>CKD</td>
<td>55</td>
<td>49</td>
<td>63</td>
<td>0.05</td>
</tr>
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<td>Diabetes Mellitus</td>
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<tr>
<td>Hyperlipidemia</td>
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<td>95</td>
<td>95</td>
<td>0.87</td>
</tr>
<tr>
<td>MI</td>
<td>37</td>
<td>39</td>
<td>34</td>
<td>0.43</td>
</tr>
<tr>
<td>Stroke</td>
<td>7</td>
<td>5</td>
<td>9</td>
<td>0.23</td>
</tr>
</tbody>
</table>

**HYPOTHESIS**

- We hypothesized that patients with frequent apneic and hypopneic episodes (AHI ≥ 30/hr) would have more adverse cardiovascular events post PCI compared to patients with non-severe OSA or no OSA.

**METHODS**

POLYSOMNOGRAPHY

PCI (N=220)

NORMAL (N: 9%) AHI < 5
MILD (N: 28%) AHI 5-14
MODERATE (N: 24%) AHI 15-30
SEVERE (N: 39%) AHI > 30

COMPARISON GROUPS

NON-SEVERE OSA
SEVERE OSA

**TABLE 2: UNI AND MULTIVARIATE ANALYSIS**

**SUMMARY**

- The presence of severe OSA was associated with higher composite end point of MI + redo PCI + death following percutaneous intervention for unstable angina and acute coronary syndrome.
- redo PCI was the primary determinant of increased cardiovascular events in patients with severe OSA post PCI.
- There was no significant difference in mortality and MI between patients in the two groups.
- Severe OSA, age > 65 and past MI were independent predictors of cardiovascular events.

**CONCLUSION**

- Severe OSA has a negative impact on coronary event rate after PCI.
- Whether treating OSA with positive airway pressure therapy helps reduce these events needs to be further investigated.

**DISCLOSURES**

All authors have nothing to disclose.