Cardiogenic Shock Epidemiology in Cardiac Intensive Care Units (CICUs) Using the Framework of the Shock Academic Research Consortium (SHARC) Consensus Definitions

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BACKGROUND

- The Shock Academic Research Consortium (SHARC) recently proposed pragmatic consensus definitions to standardize classification of cardiogenic shock (CS) populations in registries and clinical trials.
- We aimed to describe contemporary CS epidemiology when the SHARC definitions are applied to a CICU population.

METHODS

- The Critical Care Cardiology Trials Network (CCCTN) is an investigator-led, collaborative, multinational research network of advanced CICUs (coordinated by the TIMI Study Group).
- CS was defined as a cardiac disorder that results in SBP <90 mmHg for ≥30 min (or the need for vasopressors, inotropes, or MCS to maintain SBP ≥90 mmHg) with hypoperfusion.
- Primary etiologic categories included acute myocardial infarction-related CS (AMI-CS), heart failure-related CS (HF-CS), and non-myocardial (secondary) CS; post-cardiomyopathy CS was not included since CCCTN is a registry of medical CICU admissions (Fig 1).
- HF-CS was subcategorized as *de novo* HF-CS vs. *acute-on-chronic* HF-CS.
- Pts with both cardiogenic & distributive shock were separately classified as mixed shock (MS).

RESULTS

- Of 7,053 patients meeting shock criteria (2017-2022), 65% had CS and 17% had MS (Fig 2).
- Of patients with CS (n=4,619), 27% had AMI-CS (65% STEMI), 59% HF-CS, and 14% secondary CS (Table 1).

Figure 1. Framework for classification of cardiogenic shock.

Figure 2. Shock etiology in a CICU population.

Table 1. Characteristics and CICU resources by shock etiology.

<table>
<thead>
<tr>
<th>Shock Category</th>
<th>AMI-CS (n=1,720)</th>
<th>De novo HF-CS (n=1,101)</th>
<th>Secondary CS (n=1182)</th>
<th>De novo HF-CS (n=752)</th>
<th>Mixed shock (n=401)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (y)</td>
<td>68 (59-76)</td>
<td>62 (51-73)</td>
<td>63 (54-72)</td>
<td>68 (58-76)</td>
<td>68 (57-76)</td>
</tr>
<tr>
<td>Heart arrest</td>
<td>34%</td>
<td>32%</td>
<td>11%</td>
<td>25%</td>
<td>26%</td>
</tr>
<tr>
<td>SOFA score ≥6</td>
<td>51%</td>
<td>50%</td>
<td>38%</td>
<td>46%</td>
<td>70%</td>
</tr>
<tr>
<td>Lactate ≥2 mmol/L</td>
<td>37%</td>
<td>38%</td>
<td>24%</td>
<td>34%</td>
<td>36%</td>
</tr>
<tr>
<td>VAS (4 hours)</td>
<td>5 (2-10)</td>
<td>4 (0-14)</td>
<td>4 (2-8)</td>
<td>3 (0-9)</td>
<td>10 (4-25)</td>
</tr>
</tbody>
</table>
- Most CS and MS was risk stratified as SCAI C (54% and 50%, respectively; Fig 3). Patients with AMI-CS and MS were most likely to present in SCAI stage D or E (41% and 42%, respectively).

Figure 3. SCI shock stage by shock etiology.

Figure 4. In-hospital mortality by shock etiology.

CONCLUSIONS

- The SHARC consensus definitions for CS classification can be pragmatically applied in contemporary clinical registries.
- Application of SHARC definitions in this population depicts the contemporary landscape of CS.

DISCLOSURE OF FACULTY RELATIONSHIPS:
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