Elucidating Clinical Phenotypes of Patients with Mixed Shock Admitted to Cardiac Intensive Care Units: Insights from the Critical Care Cardiology Trials Network

Aditya Dewanjee, BS1; Ajar Kochar, MD, MHS2; David D. Berg, MD, MPH3; Erin A. Bohula, MD, DPhil4; Jeong-Gun Park, PhD5; Sean van Diepen, MD, MSc6; Jason N. Katz, MD, MHS4; David A. Morrow, MD, MPH2; Shashank S. Sinha, MD, MSc6; for the CCCTN Investigators

1Department of Medicine, University of Virginia, Charlottesville, VA, USA. 2Lurie Cardiac Intensive Care Unit, TIMI Study Group, Cardiovascular Division, Brigham and Women’s Hospital and Harvard Medical School, Boston, MA. 3Department of Critical Care Medicine and Division of Cardiology, Department of Medicine, University of Alberta, Edmonton, Alberta, Canada. 4Division of Cardiology, Department of Medicine, Duke University School of Medicine, Durham, NC. 5Yvonne Heart and Vascular Institute, Inova Fairfax Medical Campus, Falls Church, VA.

BACKGROUND

Mixed shock accounts for 20% of shock cases seen in contemporary cardiac intensive care units (CICUs).

Emerging data suggests that mixed shock has high mortality; however, this population is still poorly understood and not well characterized.

METHODS

The CCCTN is a multicenter network of advanced cardiac intensive care units (CICUs) in North America.

During 2017-2020, each CICU contributed an annual 2-month period of all consecutive admissions (n=13,300).

Mixed shock (MS) subjects were stratified into those with acute MI (AMI-MS) and without (non-AMI-MS).

RESULTS

Among 3884 CICU admissions with shock, 840 (22%) presented with MS; 169 AMI-MS and 671 non-AMI-MS.

Of MS patients, 87 had clear evolution from CS to MS while 687 were captured as primary MS.

Overall, pts with MS had high shock severity; Median SOFA score was 10.0 (25-75%: 7.0-12.5) in MS and 7.0 (5.0-10.0) in primary CS patients.

Comparing AMI vs. non-AMI MS, hx of HF (Table) and acute sepsis (47.8% vs 67.6%, p<0.001) were less common in AMI-MS. AMI-MS had more end-organ injury: lactate & AST (Table, p<0.01).

RESULTS (Continued)

Length of hospital stay was 16.0 (IQR, 9.5-26.1) and 16.8 (IQR, 9.6-27.0) days for AMI and non-AMI MS.

Use of advanced ICU therapies in MS was high and AMI-CS required more use (p<0.0001 for each of):

- Mechanical ventilation (81.1% vs 67.5%)
- Invasive cardiac procedures (76.3% vs 16.2%)
- Temporary mechanical support (56.8% vs 16.7%).

AMI-MS, non-AMI-MS, and “pure” cardiogenic shock had in-hospital mortality of 50.3% vs. 43.5% vs. 30.5%, respectively (p<0.0001, Figure 1).

Among AMI-MS patients, risk indicators for in-hospital mortality were worst pH <7.25, treatment with ≥3 pressors, and use of renal replacement therapy.

CONCLUSIONS

In a contemporary multicenter analysis of advanced CICUs, patients with mixed shock had high in-hospital mortality and need for advanced ICU care.

Patients with AMI-MS present with particularly high shock severity and subsequent resource utilization.

Low arterial pH, use of ≥3 pressors, and need for RRT are poor prognostic indicators in MS.

DISCLOSURE OF FACULTY RELATIONSHIPS:
The authors have no disclosures related to the content of this abstract.

Email us at CCCTN@partners.org.