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2022 Symposium Presentation

SCAI SHOCK Stage Classification: What is Missing from the Latest Update?

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Abstract

The revised Society for Cardiovascular Angiography and Interventions classifications reflect graduation of severity within each stage and pathway by which patients progress or recover. However, they are limited regarding the following: their predictive role to guide therapy; escalation of therapy or referral; variability in diagnostic criteria and interpretation; presence of other disease modifiers and confounders; variability of etiology and reversibility of cause; response to therapy and trajectory to be taken into risk stratification; magnitude and phenotypes of end-organ damage. Thus, we need a modified risk score to predict the necessity to escalate therapy and consider advanced therapies, such as mechanical circulatory support. Future research on validation studies and reclassification analyses is needed.

Keywords: cardiogenic shock, classification

Background

In December 2021, the latest statement of the Society for Cardiovascular Angiography and Interventions (SCAI) shock stage classification for adult patients was endorsed by the American College of Cardiology (ACC), American College of Emergency Physicians (ACEP), American Heart Association (AHA), European Society of Cardiology (ESC) Association for Acute Cardiovascular Care (ACVC), International Society for Heart and Lung Transplantation (ISHLT), Society of Critical Care Medicine (SCCM), and Society of Thoracic Surgeons (STS).¹ Despite its recent publication, the consensus in the field is that this latest strategy needs refinement.

The original 2019 SCAI Shock Stages rank the severity of cardiogenic shock using the A, B, C, D, E scale.² The initial goal was to standardize the terminology used in the field. However, the practical utility of this system to guide management in a clinical setting has been challenging. While the extremes of the scale (A, D, and E) are now relatively agreed upon and recognized, the middle of the spectrum (B

and C) can be more difficult to identify and use. Importantly, the current stages identify severity, but they lack actionable terminology. To move classification systems forward, six current limitations need to be addressed (Figure). Each limitation includes a practical and simple solution that could be used in a future scoring system.

Ideally, future scoring systems should not measure and classify what *was* done but identify what *needs to be* done. The ideal scoring system can guide physicians on when and what type of care escalation is needed. Further, diagnostic and prognostic accuracy and management targets could be improved with additional standardization of variables and expansion of criteria to include important factors, such as etiology.

Conclusion

If these challenges in the current staging approach are addressed and incorporated in future iterations of cardiogenic shock classifications, the management of cardiogenic shock will certainly move forward.

Diagnostic Criteria for Stages Vary

- Clinical variables for diagnosis of shock must be standardized
- While the current system can predict outcomes, it lacks the ability to guide management

Variable Diagnostic Criteria Results in Variable Phenotypes

- Investigations using the current system show wide variances, so standardization has not been accomplished
- The mortality ranges vary greatly for the Classic Shock “C” phenotype.

Many Risk Modifiers Beyond Perfusion State of Hypotension

- Certain risk factors (older age, worsening shock, poor hemodynamics, abnormal echocardiogram) could be given a score.
- Additional variables should be incorporated and considered such as: location and initial rhythm of cardiac arrest, organ failure, severe acidosis, systemic inflammation, etc.

Etiology and Reversibility of Cardiac Dysfunction Matters

- Etiology is not currently used in the current SCAI stage, but knowing the etiology can impact treatment options and outcomes.
- Not all shock is created equal.

Magnitude of End-Organ Damage

- Expansion of phenotypes of Shock is needed.
- Incremental classification is needed so that a threshold for escalation and referral can be set.

Dynamic Changes, Trajectory, Response to Therapy Matters

- The dynamics in shock patients means that information changes regularly, thus timing of assessments needs to be more clearly identified
- Simplified algorithms must include responses to therapy and changes in status

Figure. Summary of the challenges to the current cardiogenic shock classification scheme.

Disclosures

Dr. Bozkurt serves on clinical event committees for the GUIDE-HF Trial (Abbott Laboratories). She is a consultant for scPharmaceuticals, Amgen, Vifor, Relypsa, and Respicardia. Dr. Bozkurt also serves on the data safety and monitoring committee for the ANTHEM trial (LivaNova).

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