Invited Editorial

Management of cardiogenic shock in older adults: A commentary on the 2024 American Heart Association Scientific Statement

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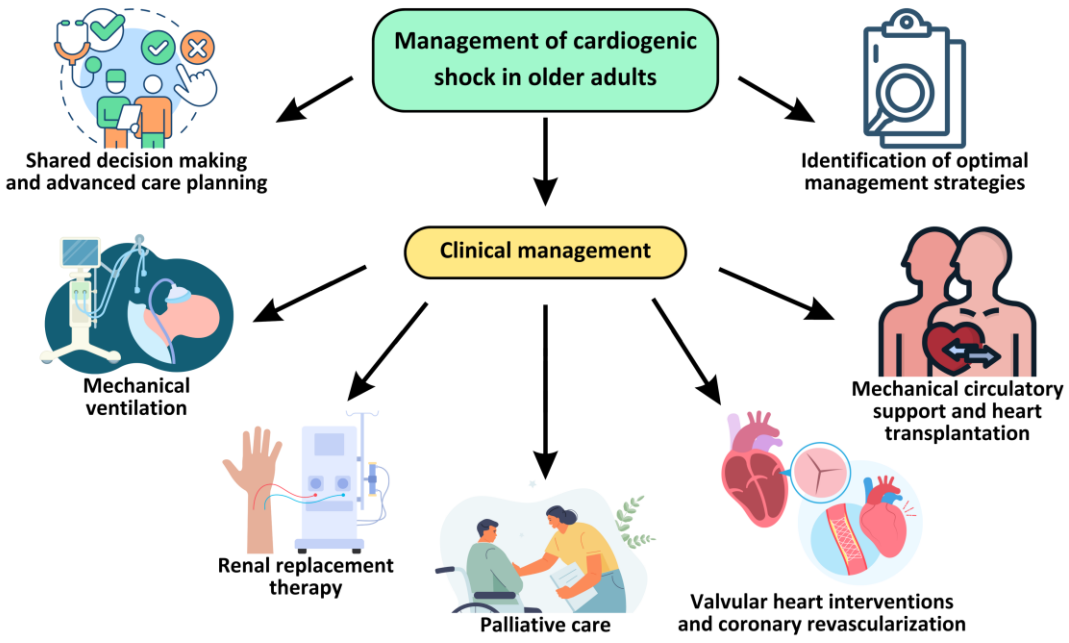
Abstract
Cardiogenic shock occurring in older adults is associated with higher short-term mortality rates and poorer outcomes. However, current evidence and dedicated approaches in clinical practice to assess and manage this condition in older adults are limited. The American Heart Association (AHA) has issued a scientific statement to tackle the primary issues related to the risk of cardiogenic shock in older persons, as well as to provide potential solutions for its optimal management. This editorial delves into the primary principles examined by the AHA concerning decision-making process, clinical management practices, and forthcoming strategies for the treatment of older patients with cardiogenic shock.

Graphical abstract



Key words: Mechanical ventilation, renal replacement therapy, coronary revascularization, mechanical circulatory support, palliative care

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Introduction

Cardiogenic shock (CS) occurring in older adults poses significant challenges due to higher short-term mortality and worse outcomes. However, available evidence and dedicated approaches in clinical practice to assess and manage this condition in older adults are limited. The American Heart Association (AHA) has issued a scientific statement that focuses on the primary problems related to CS in older adults and provides valuable insights for its optimal management (1).

This editorial explores the key concepts explored by the AHA about the decision-making process, clinical management techniques, and future initiatives for treating older patients with CS.

Decision-making and advanced care planning

The management of older adults necessitates addressing a greater level of care complexity as compared to younger patients. Frailty is common in older patients, especially in those with significant cardiovascular impairment, along with deficits in several domains including physical, cognitive, social, and functional areas (2). As a result, the main outcomes in geriatric medicine are seldom univocal and go beyond mortality alone, including prolonged hospitalization, repeated hospital admissions, deterioration in physical and cognitive abilities, disability, and reduced quality of life (3). Considering the significant tradeoffs associated with different treatment approaches, especially for major adverse events such as CS, shared decision-making is a fundamental principle in the management of older adults (4). For the above reasons, the AHA recommends focusing on enhancing the communication abilities, and implementing interdisciplinary management and advanced care planning (ACP) as crucial areas for improvements (1). ACP holds particular significance for older adults with CS, since it can be defined as the process of giving value to the patients' preferences and long-term life ambitions, so that surrogate decision-makers can transform these values into tailored medical care strategies (5).

Clinical managements

Mechanical ventilation

Due to the complexities associated with CS, a significant number of older patients experiencing CS may eventually require mechanical ventilation (MV) to sustain their respiratory function (1). The statement highlights the preference for invasive MV over non-invasive methods, as invasive MV typically results in more significant improvements in hemodynamic parameters and better clinical outcomes. However, the decision to use invasive positive pressure ventilation in cases of CS must be made carefully, considering potential adverse effects in specific clinical contexts. Additionally, it is crucial to respect patient preferences, assess their attitudes towards cardiopulmonary resuscitation and prolonged MV, and incorporate these factors into the treatment decision-making process (6).

Renal replacement therapy

Older patients with underlying renal conditions and CS often require renal replacement therapy (RRT). The American Heart Association (AHA) recommends continuous RRT (CRRT) over intermittent methods due to concerns about hemodynamic instability and the potential adverse effects of significant intravascular volume shifts (1). A study by Conroy et al. (7) found that among intensive care unit (ICU) patients needing CRRT, older adults did not show significantly higher mortality rates in the ICU or dependency on dialysis compared to younger counterparts. However, they experienced higher in-hospital mortality rates and poorer long-term outcomes (7). Recent research has underscored the importance of frailty in determining outcomes for patients with CS. Beyond age, factors such as baseline renal function, comorbidities, quality of life considerations, and individual patient goals and priorities should be considered when making treatment decisions (8).

Coronary revascularization

CS further increases the risks associated with ischemic heart disease in older adults (2,9). AHA statement emphasized the clinical management of acute myocardial infarction complicated by cardiogenic shock (AMI-CS) in older adults, focusing primarily on percutaneous coronary intervention (PCI) and surgical revascularization (1).

PCI, being less invasive, is the preferred method for early revascularization in older patients, showing significant improvement in in-hospital mortality rates among those with AMI-CS (10). Alternatively, surgical revascularization, notably coronary artery bypass grafting (CABG), aims for comprehensive revascularization and addresses concomitant valvular or mechanical complications of AMI. CABG becomes an option when PCI is not feasible or highly indicated. However, as a more invasive procedure, CABG carries a higher in-hospital mortality rate of up to 50%. Therefore, the decision to proceed with CABG surgery must carefully weigh the preoperative burden of geriatric syndromes and postoperative risks. Therefore, the decision to proceed with CABG surgery must carefully weigh the preoperative burden of geriatric syndromes and postoperative risks (2, 9).

Valvular intervention

Acute valvular heart disease (VHD) can lead to significant hemodynamic compromise and CS) Therefore, various treatment options are suggested for managing acute VHD in older individuals. These include transcatheter aortic valve replacement, urgent cardiac surgery, and chordal-sparing mitral valve replacement (1). Given that surgical valve repair or replacement often comes with higher mortality rates, a higher risk of multiple comorbidities, and prolonged recovery periods, transcatheter therapies present a viable alternative for clinical management (11).

Temporary and durable mechanical circulatory support and heart transplantation

In recent years, the availability of temporary mechanical circulatory support (t-MCS) devices has seen a significant increase in managing CS. However, as noted, deciding to employ t-MCS in older adults necessitates careful deliberation and is typically undertaken with a clear exit strategy in mind. Given its aggressive nature, it is vital to avoid futile t-MCS interventions, with patient preference being paramount; individuals with explicit do-not-resuscitate preferences should not be considered candidates (1). T-MCS serves as a potential bridge to durable MCS or to stabilize patients while on a heart transplantation (HT) waiting list (12). It effectively postpones the decision-making process regarding durable solutions, proving invaluable for navigating the sensitive terrain of HT decisions in the context of CS. Nevertheless, early evaluation for durable MCS or HT is crucial for patients who cannot be weaned off t-MCS (1). Concerning the implantation of durable MCS, particularly durable left ventricular assist devices (LVADs), studies have indicated that age independently predicts mortality post-implantation, suggesting potential suboptimal outcomes with this strategy (13). Furthermore, evaluating older adults considered for durable LVAD should prioritize assessing comorbidities associated with advanced heart failure, such as frailty, end-organ dysfunction, malnutrition, and available caregiver support (1). Additionally, as urgent HT from a CS state gradually becomes a common strategy among older adults, studies show that carefully selected older adult HT recipients have similar survival, rehospitalization, and graft failure rates compared to younger patients, making individual transplant programs begin to view the upper age limit for candidate consideration (13). However, the ethical concern regarding the allocation of organs due to scarcity is still controversial, and whether it is the optimal treatment option for multi-comorbid older adults is an issue that requires discussion (13, 14).

Palliative and end-of-life care

When facing CS, it is important to note that the expected outcomes for elderly patients may differ from those of younger patients, as many prioritize quality of life over increased longevity in treatment decisions. According to the statement, palliative therapy is particularly important for patients unlikely to benefit from advanced therapies (1). It also plays an essential role for patients undergoing advanced therapy, aiding in decision-making and offering crucial support in case of adverse outcomes (1). With the increasing demand for palliative care for cardiogenic shock (PCCS), there should be a corresponding increase in trained physicians specialized in palliative care. Moreover, the integration of PCCS should be considered early in the management of all elderly patients with cardiogenic shock, irrespective of their projected trajectory and eligibility for advanced therapies (15, 16).

Future directions

Older adults constitute a distinct age subgroup with unique care needs and objectives. Particularly when addressing crucial diseases like CS, the considerations extend beyond mere mortality rates, encompassing factors such as quality of life and patient preferences regarding treatment outcomes. Despite the significant proportion of older adults affected by CS, current clinical trials and registries fall short in generating robust recommendations tailored to this demographic.

Additionally, the criteria used in clinical settings to determine the escalation of care for older adults often lack sufficient empirical support (1).

Consequently, there is a pressing need for additional research focusing on older CS patients and the development of more effective risk assessment tools tailored to this population. Furthermore, the prediction and optimal management of out-of-hospital cardiac arrest in older adults require special attention (17). Effective strategies and personalized approaches are essential to improve outcomes and quality of life for older patients experiencing such critical events.

Conclusion

In this statement, the AHA offers practical recommendations for managing CS in older adults. It is crucial to understand that age is not the sole factor in decision-making; rather, patient needs and preferences play a significant role. Therefore, a comprehensive, multidisciplinary approach is essential, emphasizing shared decision-making between physicians and patients. Additionally, further research is needed to develop clinical practice guidelines specifically tailored to managing CS in older adults.

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