Anesthesia Management of Organ Donors

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KEYWORDS

• Organ transplant • Organ donor • Brain death • Ischemia and reperfusion injury
• Standardized donor management

KEY POINTS

- Most organs in the United States are procured from donation after neurologic determination of death (brain death), but organs from donation after circulatory death (cardiac death) and living organ donors are increasing.
- Physiologic derangements are common in potential donors: in order to maintain the viability of the organs for transplant, management should be started early.
- Expansion of the donor pool through the inclusion of extended criteria and high-risk donors addresses organ shortage but presents new challenges in donor management and organ transplantation.
- Ischemia/reperfusion injury in organ transplants is unavoidable; however, proper management can lessen the likelihood of postoperative graft failure and improve outcome.
- Standardized donor management has been shown to improve the number of organs transplanted per donor and the quality of the grafts.

INTRODUCTION

Worldwide, the shortage of suitable organs is the biggest obstacle for organ transplants. The discrepancy between need and supply of the suitable organs is wide and increasing. At present, organs for transplant in the United State are predominantly from donation after neurologic determination of death (brain death). To address this growing problem, the donor pool has been expanded to include organs from donation after circulatory determination of death (cardiac death) and extended criteria donors.[1] These organs theoretically have a higher risk of developing perioperative dysfunction, presenting unique challenges for donor management and organ

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transplantation. In addition, a large percentage of donated organs are not used for transplant.[2] Most unused organs are refused because of poor quality. Proper donor management has a potential to increase the number and quality of organs procured from donors.[3]

Because anesthesiologists play a key role in maintaining hemodynamic and physiologic stability of donors and preserving function in donated organs, it is important for anesthesiologists to understand the physiologic changes associated with organ donation and to provide proper care to the donors. This article discusses physiologic derangements of various organ systems associated with organ donation and the latest developments in management for organ donors before, during, and after procurement.

MANAGEMENT OF ORGAN DONORS BEFORE PROCUREMENT

Physiologic response to death is a complex process during which multisystem derangements are commonly seen. First, preexisting comorbidities or trauma may have caused severe damage to vital organs. In addition, the process of brain death results in physiologic derangements of various organ systems. If not managed properly, these derangements lead to severe injury to the organs, making them unsuitable for transplant. The proper management of organ donors should start in the intensive care unit (ICU) even before donation is being considered and should continue during the entire donation process until transplant. The goal of management before the declaration of brain death is to optimize the chance of survival. Once brain death is declared, the goal of donor management is shifted to preserve the viability of potential transplant organs. Physiologic responses in individual systems to death and recommended clinical management are discussed later (Fig. 1).

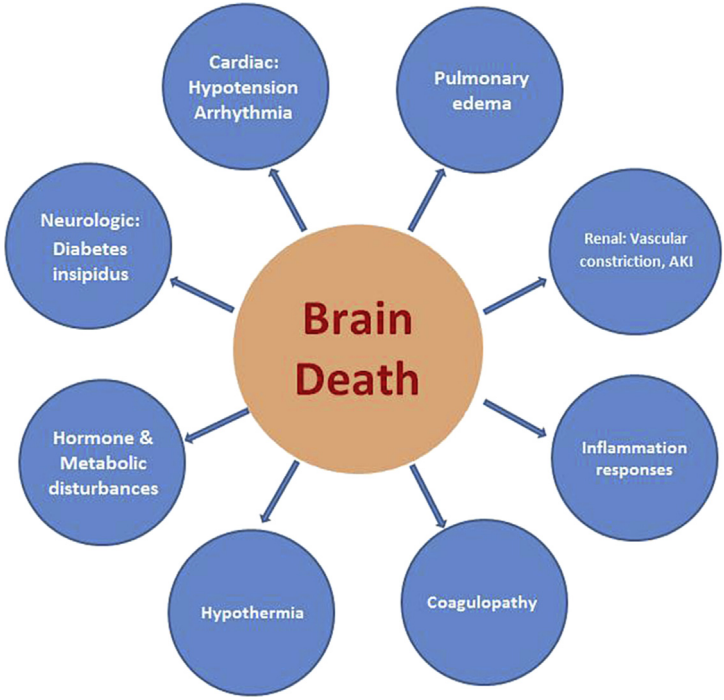

Fig. 1. Physiologic response to brain death. AKI, acute kidney injury.