Long-term clinical outcome of cardiogenic shock patients undergoing Impella CP treatment vs. standard of care

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Background: The number of patients treated with the mechanical circulatory support device Impella Cardiac Power (CP) for cardiogenic shock is steadily increasing. The aim of this study was to investigate long-term survival and complications related to this modality.

Methods: Patients undergoing Impella CP treatment for cardiogenic shock were retrospectively enrolled and matched with cardiogenic shock patients not treated with mechanical circulatory support between 2010 and 2020. Data were collected from the cardiogenic shock registry of our university hospital.

Results: 68 patients with refractory cardiogenic shock without mechanical circulatory support were matched with 68 patients treated with Impella CP. At presentation, the mean age was 67±14 years with 82% being male in the group without support and 68±14 years (p=0.65) with 77% being male (p=0.52) in the group with Impella. There was no significant difference in the rate of cardiac arrest (57% vs. 54%, p=0.86) and myocardial infarction was the predominant cause of cardiogenic shock in both groups (66% vs. 74%, p=0.34). A total of 46% of patients without cardiocirculatory support and 54% of patients with Impella support died during the first month (p=0.32). After one year, mortality rates were similar in both groups (53% in conventional vs. 59% in Impella CP group, p=0.51) as was mortality rate at long-term 5-years follow-up (73% in conventional vs. 72% in Impella CP group, p=0.50). The rate of clinically significant bleedings during ICU stay was much lower in the conventional group than in the Impella support group (25% vs. 42%, p=0.03).

Conclusion: In this small observational and non-randomized analysis no difference in long-term outcome between patients treated with Impella CP vs. guideline directed cardiogenic shock therapy without mechanical circulatory support could be detected. Care must be taken regarding the high rate of bleeding and vascular complications when using Impella CP. Large, adequately powered studies are urgently needed to investigate the efficacy and safety of Impella CP in cardiogenic shock.