

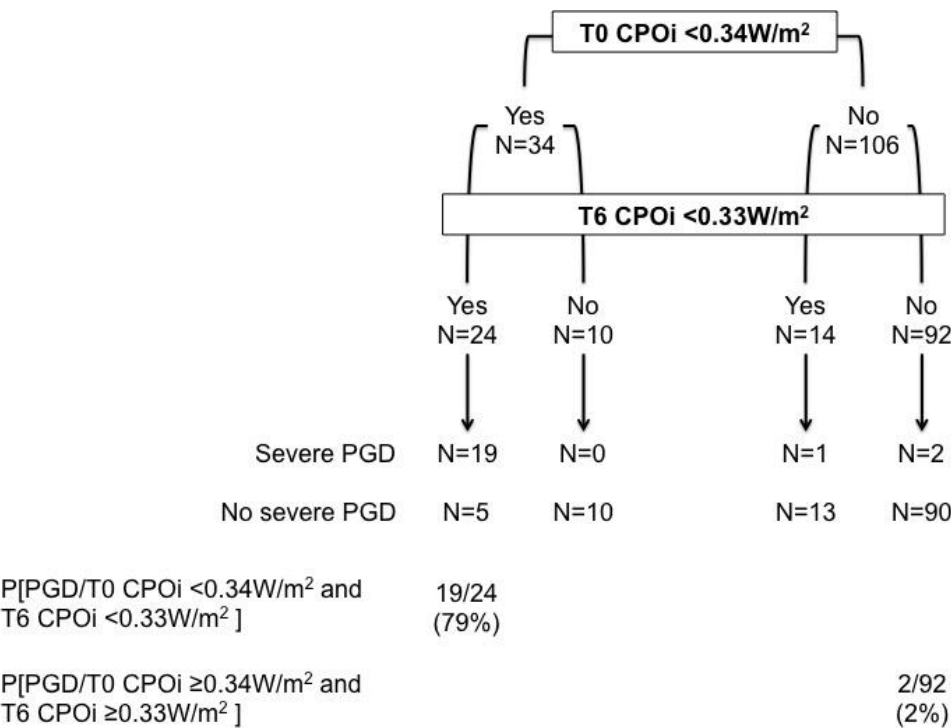
Cardiac power output index and severe primary graft dysfunction post-heart transplantation

Lim HS, Ranasinghe A, Chue CD, Quinn D, Mascaro J

University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK

Objective: To evaluate the value of cardiac power output index (CPOi) in predicting severe primary graft dysfunction (PGD) post-heart transplantation (defined as mechanical circulatory support (MCS) and/or mortality <30 days post-transplant).

Participants: Consecutive patients who underwent heart transplantation from January 2014-December 2019 (n=160). Twenty patients were excluded, as MCS was instituted immediately post-transplant from cardiopulmonary bypass.



Measurements and main results: Hemodynamic data on return to intensive care unit (time 0, T0) and at 6 hours (T6) were collected to calculate CPOi at both time points in 140 consecutive patients – 22 patients developed severe PGD. CPOi at T0 correlated with donor: recipient predicted heart mass and inversely with inotrope score. Patients who developed severe PGD had significantly lower CPOi at T0 and T6. The areas under the ROC curve for CPOi at T0 and T6 for the development of severe PGD were 0.90 and 0.92 respectively. Adjusting for vasoactive-inotrope score did not improve discrimination. The probability of severe PGD if CPOi at T0 < 0.34 W/m² and T6 < 0.33 W/m² was 79%, but was only 2% if both CPOi at T0 and T6 were > 0.34 W/m² and > 0.33 W/m² respectively. After adjusting for baseline differences, CPOi at T6 (OR 0.78; 95% CI 0.67-0.91, p=0.001) was significantly associated with severe PGD.

Conclusion: Low CPOi at T0 is associated with severe PGD. Serial assessment of CPOi increases the diagnostic probability of severe PGD.

FIGURE: The distribution of patients with CPOi at T0 and T6 of < 0.34 W/m² and < 0.33 W/m² respectively. The probability of severe PGD if CPOi at T0 and T6 of < 0.34 W/m² and < 0.33 W/m² respectively is 79% (ie: positive likelihood ratio of 20). In contrast, the probability of severe PGD if if CPOi at T0 and T6 of ≥ 0.34 W/m² and ≥ 0.33 W/m² respectively is 2% (ie: positive likelihood ratio of 0.12).