

Outcomes of kidney transplantation from uncontrolled donors after circulatory death vs expanded-criteria or standard-criteria donors after brain death at an Italian Academic Centre: a prospective observational study

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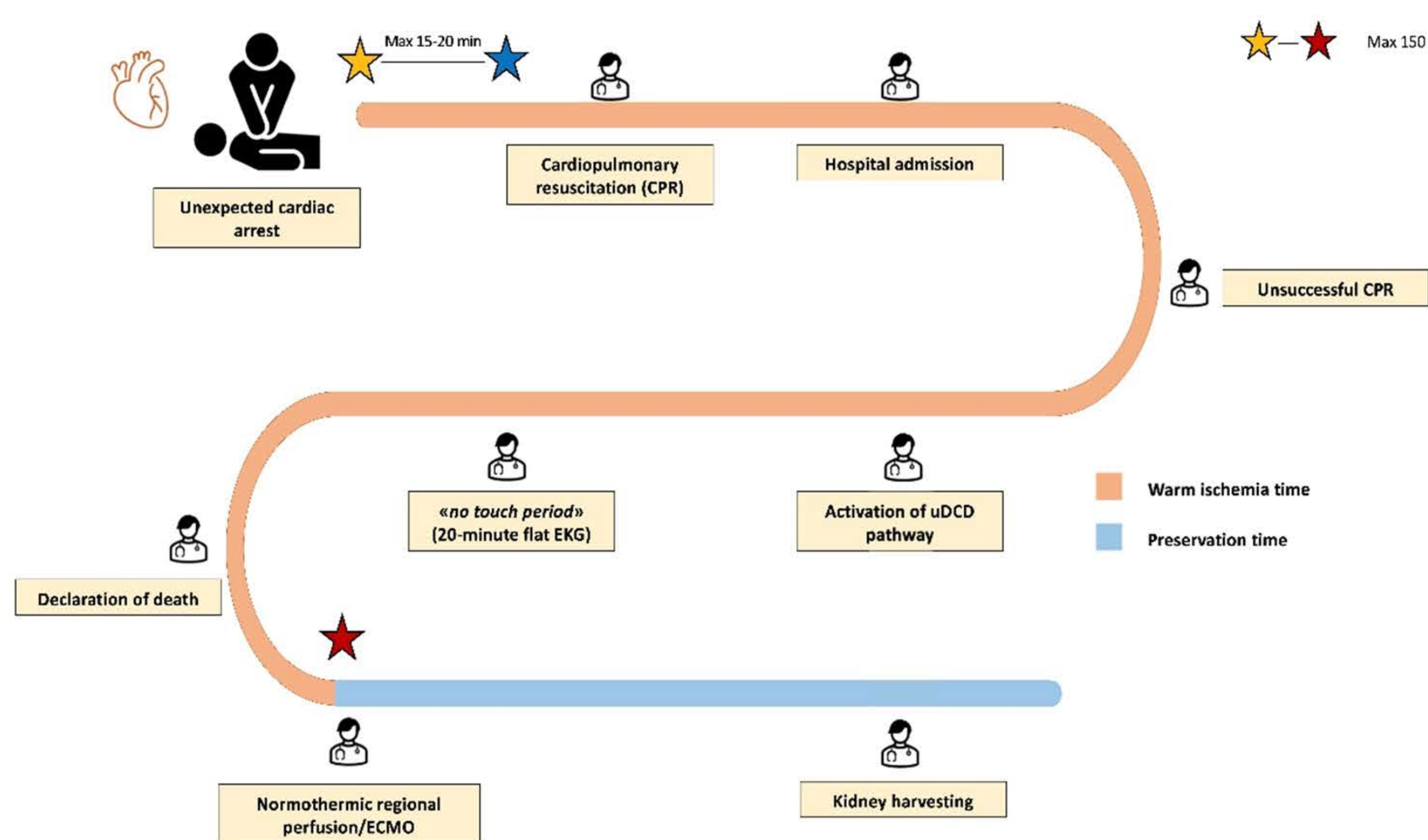
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Background

The use of kidneys from “expanded criteria” donors after brain death (ECD) and uncontrolled donors after circulatory death (uDCD) has been warranted to increase the pool of donors for kidney transplantation (KT). However, there is lack of evidence on the feasibility and safety of KT from such donors in the Italian setting.



Methods

We queried our prospectively KT database to select patients undergoing KT from uDCDs, ECDs, and standard-criteria donors [SCD] from January 2017 to December 2020. All grafts from uDCDs were perfused with hypothermic machine perfusion (HMP) before KT (Figure 1). The feasibility of KT from uDCD was established considering the resistance during HMP (≤ 0.3 mmHg/ml/min). We compared the perioperative and mid-term functional outcomes among different donor types.

Results

Overall, 172 KTs were included (20% from uDCDs; 37% from ECDs, and 43% from SCDs). The donor’s profile was different among the study groups, while recipients’ characteristics did not significantly differ expect for median age and median Charlson comorbidity index. Median warm ischemia time for uDCDs was 149 min (IQR 143-160). uDCDs and ECDs grafts had longer median cold ischemia times as compared to SCDs grafts. Among uDCD, the median perfusion time was 10 hours (IQR 8-15), with a median minimal resistance of 0.18 mmHg/ml/min (IQR 0.13-0.26). The proportion of patients experiencing DGF, the median LOH, the overall and major complications rate, were significantly higher among recipients from uDCDs. The proportion of patients needing dialysis at last follow-up was significantly higher among recipients from uDCDs (33.3% vs 8.5% vs 5.4%, $p < 0.001$). However, the median eGFR was lower for recipients from ECDs compared to those from uDCDs and SCDs, respectively (45.2 vs 56.6 vs 59.0 ml/min, $p < 0.001$).

Conclusion

While “marginal” donors represent a relevant source of organs, KTs from uDCDs carry higher risks of surgical complications, DGF, and graft nephrectomy as compared to KT from both ECDs and SCDs. Yet, recipients of uDCDs with no early postoperative adverse events showed functional outcomes at a mid-term follow-up that are better than those from ECDs. Further research is needed to establish the impact of HMP on organs from ECDs and uDCDs in the Italian scenario.