Early-Start vs. Conventional-start Peritoneal Dialysis in AKI from Cardiorenal Syndrome Type 1, A Randomized Controlled Trial (STARRT-PD)

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Background

Peritoneal dialysis (PD) is a feasible option for acute kidney injury (AKI) in hemodynamically unstable patients. However, the optimal timing for initiating PD in cardiorenal syndrome type 1 (CRS1) remains unclear.

Methods

In a cardiac care unit of a tertiary hospital in Thailand, CRS1 patients who had AKI stage II between October 2020 and September 2021 were enrolled in a randomized, open-label controlled study. Patients were randomized into two groups: early-start PD strategy (starting PD within 24 hours after AKI stage II) and conventional-start PD strategy (starting PD at 72 hours if reach AKI stage III or with indication). The primary outcome was 90-day mortality. Secondary outcomes included fluid balance, sodium removal during the first 5 days, and PD safety.

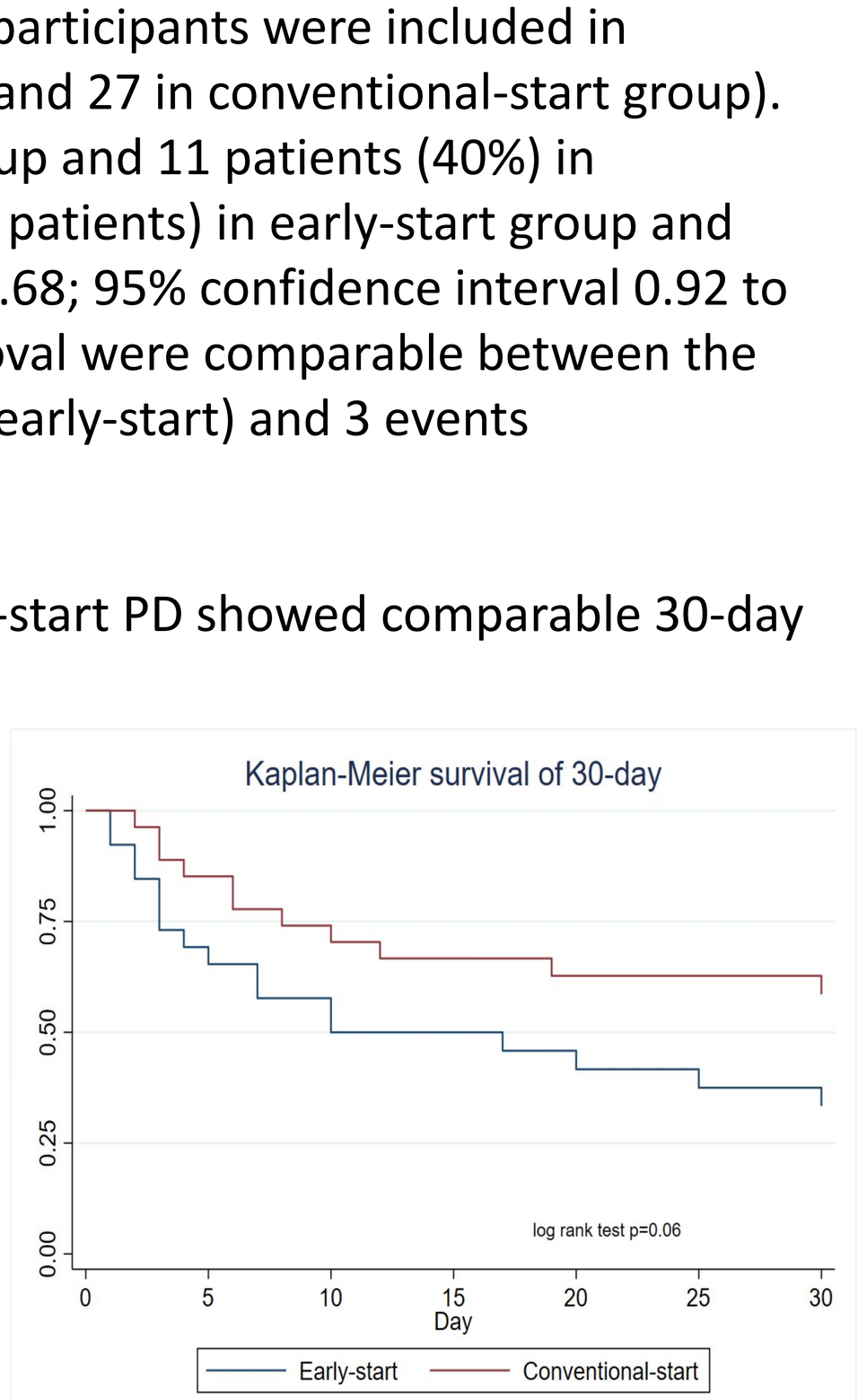
Results

Seventy-seven CRS1 patients were enrolled, and 53 eligible participants were included in modified intention-to-treat analysis (26 in early-start group and 27 in conventional-start group). Dialysis was initiated in 26 patients (100%) in early-start group and 11 patients (40%) in conventional-start group. The 30-day mortality was 65% (17 patients) in early-start group and 40% (11 patients) in conventional-start group (relative risk 1.68; 95% confidence interval 0.92 to 3.07; p=0.07). The first 5-day fluid balance and sodium removal were comparable between the two groups. PD-related complications occurred in 6 events (early-start) and 3 events (conventional-start).

Conclusion

Among CRS1 patients with AKI, early-start and conventional-start PD showed comparable 30-day mortality risk (TCTR20200928003).

	Early-start (n=26)	Conventional-start (n= 27)	P value
Age, year	70.8 ± 10.7	65.3 ± 10.9	0.07
Male	18 (69.2%)	19 (70.3%)	0.92
Weight, kg	64.4 ± 14.5	69.8 ± 16.7	0.26
BMI	24.8 ± 3.8	24.5 ± 4.0	0.82
DM	17 (65.3%)	12 (44.4%)	0.12
HT	22 (84.6%)	17 (62.9%)	0.07
Unstable hemodynamic	23 (88.4%)	20 (74%)	0.1
Cardiac arrest	13 (50%)	11 (40.7%)	0.49
Cardiac condition			
STEMI	19 (73%)	16 (59.2%)	0.28
Grace score	192.6 ± 43	222 ± 68.4	0.47
PCI	21 (80.7%)	21 (77.7%)	0.78
IABP	16 (61.5%)	11 (40.7%)	0.13
LVEF	34.6 (15.6)	37.5 (15.9)	0.62
SBP, mmHg	113.3 ± 16.3	117.8 ± 24.7	0.43
DBP, mmHg	68.0 ± 10.7	70.3 ± 15.6	0.53
MAP, mmHg	82.9 ± 10.5	85.6 ± 17.7	0.5
Fluid status			
Urine output, ml/kg/hour	0.31 (0.17,0.7)	0.67 (0.32,1.5)	
Cumulative fluid balance, ml	415 (-730,1260)	-70 (-1280,-700)	
Total furosemide dosage, mg	80 (40,260)	80 (0,200)	
Biochemistry			
Hemoglobin, g/dL	11.1 ± 2.3	11.4 ± 2.6	0.73
BUN, mg/dL	52.1 ± 20.3	41.6 ± 23.9	0.09
Creatinine, mg/dL	3.2 ± 1.2	2.7 ± 0.8	0.002
Na, mmol/L	136.6 ± 4.4	137.1 ± 6.4	0.73
K, mmol/L	4.2 ± 0.68	4.1 ± 0.54	0.54
HCO3, mmol/L	17.8 ± 5	18.2 ± 4.9	0.77
Alb, g/dL	3.3 ± 0.5	3.2 ± 0.49	0.46



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