

Clinical Outcomes of Acute Peritoneal Dialysis and Intermittent Hemodialysis in Patients with Acute Kidney Injury Requiring Kidney Replacement Therapy in Resource-Limited Setting: A Randomized Controlled Trial

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Introduction

There is no consensus on whether conventional intermittent hemodialysis (IHD) or peritoneal dialysis (PD) is the preferable modality for kidney replacement therapy (KRT) in severe acute kidney injury (AKI). In resource-limited setting, acute PD is technically simple and could be a preferred option. This study aimed to investigate the short- and long-term outcomes of AKI patients receiving IHD and PD.

Methods and Materials

This was a multicenter randomized controlled trial compared the outcome between IHD (three times a week) and acute PD (using dialysate volume of 18-24 liters per day) which enrolled adult patients with AKI requiring KRT from May 2018 to January 2021 in four centers across Thailand. Primary outcome was a 28-day in-hospital survival rate. Secondary outcomes included 28-day kidney recovery, dialysis dependence, duration of ICU period, 6-month survival rate, kidney recovery, and dialysis dependence.

Results

We included 100 patients (47 allocated to acute IHD and 53 to PD). Before RRT initiation, baseline clinical characteristics between groups were comparable (Table 1).

Table 1. Baseline patient's characteristics

	IHD (N = 47)	PD (N = 53)
Age (mean ± SD)	54 ± 15.98	55 ± 16.03
Female (n, %)	16 (34.04)	17 (32.08)
Weight (mean ± SD)	60 ± 10.84	62 ± 14.69
Height (mean ± SD)	162 ± 9.04	161 ± 8.43
BMI (mean ± SD)	22.93 ± 3.37	24.45 ± 5.57
Diabetes mellitus (n, %)	19 (40.43)	15 (28.30)
Hypertension (n, %)	21 (44.68)	19 (35.85)
ICU admission (n, %)	35 (74.47)	45 (84.91)
Sepsis (n, %)	32 (68.08)	38 (71.69)
Cause AKI (n, %)		
- Prerenal	13 (27.66)	14 (26.42)
- Sepsis	32 (68.08)	38 (71.69)
- Nephrotoxic	1 (2.13)	0
- Multifactorial	1 (2.13)	1 (1.89)
Respiratory failure (n, %)	37 (78.72)	47 (88.68)
Urine output (mean ± SD)	0.41 ± 0.53	0.56 ± 0.81
Inotropic drug (n, %)	23 (48.94)	34 (64.15)
APACHE II (mean ± SD)	20.74 ± 6.66	24.70 ± 7.59

There was no difference in the 28-day hospital survival rate between IHD and acute PD (51.06 vs 49.06 %, p=0.84), 28-day dialysis dependence (14.89 vs 7.55 %, p=0.24). Hospital survival rate and dialysis dependence at 6 months were similar between IHD and acute PD groups (36.17 vs 28.30%, p=0.39, 8.51 vs 5.66%, p=0.58). A Cox proportional hazards model demonstrated a nonsignificant difference between the mode of dialysis and survival rate (hazard ratio 1.29 (95% CI 0.60-2.25); p=0.44).

Table 2. Clinical outcomes

	IHD (N = 47)	PD (N = 53)	P-value
Primary outcome			
28-day hospital survival rate, n (%)	24 (51.06)	26 (49.06)	0.84
Secondary outcome			
Duration of ICU, days (median, IQR)	8 (4,12)	6 (4,20)	0.43
28-day hospital kidney recovery, n (%)	17 (36.17)	21 (39.62)	0.72
28-day dialysis dependent, n (%)	7 (14.89)	4 (7.55)	0.24
6-month hospital survival rate, n (%)	17 (36.17)	15 (28.30)	0.39
6-month hospital kidney recovery, n (%)	12 (25.53)	14 (26.42)	0.92
6-month dialysis dependent, n (%)	4 (8.51)	3 (5.66)	0.58

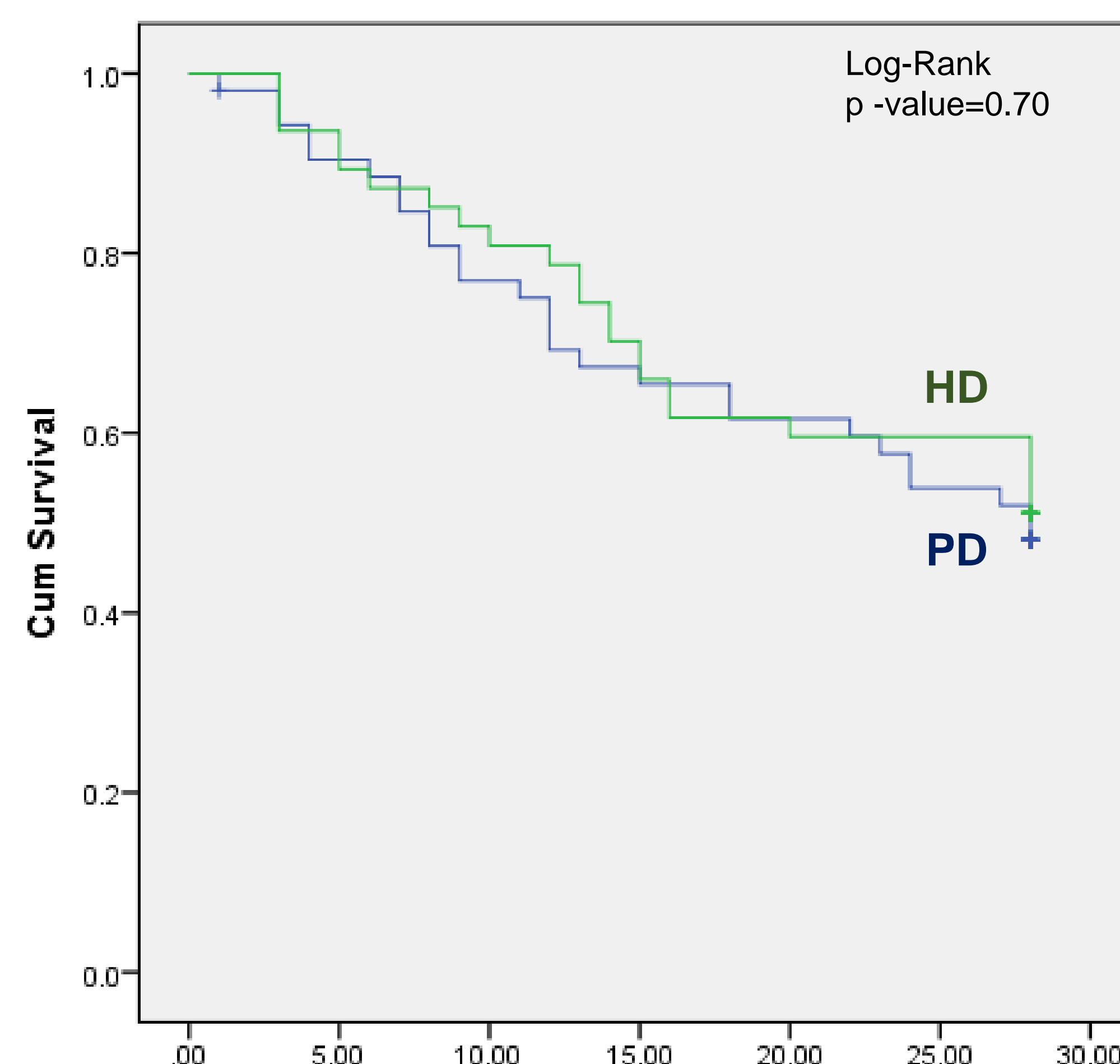


Figure 1. Kaplan-Meier survival analysis 28-day hospital survival rate

Conclusions

In AKI patients requiring KRT, acute PD showed comparable outcome to IHD both in short- and long-term.

