Once-daily-use of Icodextrin Improved Survivals of Asian Peritoneal Dialysis Patients, Particularly in Female Population

- A Propensity Score Matched Nationwide Population Study

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Background and Objectives

There are controversies whether icodextrin (ICO)-use can improve patient survivals in incident peritoneal dialysis (PD) patients. This Asian study from Taiwan compared the risk of death between ICO-users (study group) and a group of propensity score matched non-ICO-users (control group). Icodextrins was first introduced to Taiwan PD market since January 1st, 2004.

Aim 1: To investigate if once-daily-ICO-use has survival benefit to certain high-risk Asian PD patients.

Aim 2: To investigate if there is a difference of survival benefit between different gender.

Aim 3: To investigate if there is a beneficial effect upon patient survivals in diabetic and non-diabetic patients.

Methods

From January 1st, 2004 to June 30th, 2009 ; all incident PD patients who survived more than 3 months on PD in Taiwan National Health Insurance Research Database were included. ICOs were prescribed once daily for high risk patients, e.g. (1) diabetics with HbA1C > 7%, or (2) high transporters, or (3) those used high-glucose containing dialysates. Patients were followed until death or transfer to hemodialysis or renal transplantation or loss to follow up or Dec 31st, 2009. Patient survivals were compared between ICO users and propensity score matched controls. The multivariate Cox regression models were used to calculate the impact of ICO-use on mortality and to plot survival curves.

Results

A total of 1627 incident PD patients were identified. Among them, 524 ICO-users were matched with 1:1 ratio to 524 non-ICO-users for age, gender, income and comorbidities (Table 1). All ICO-users had used ICO for at least 3 months. ICO-users had better patient survivals than control cohort (HR 0.6 for ICO vs non-ICO users, 95% CI: 0.37-0.99, p=0.045)(Fig1)(Table 2). Female ICO users had significantly better patient survivals than non-ICO users (HR 0.48, 95% CI: 0.25-0.94, p=0.032), but it is not significant in male patients (HR 0.79, 95% CI 0.35-1.79, p=0.575) (Fig 2). In both diabetic and non-diabetic populations, ICO user appeared to have lower HR for all-cause mortality, but the difference was not significant (DM: HR 0.62, 95% CI 0.34-1.13, p= 0.117; Non-DM: HR 0.59, 95% CI 0.18-1.54, p=0.243).

Conclusions

Compared to a propensity score matched control cohort, once-daily-use of ICO in high risk Asian PD patients is beneficial to patient survival, particularly in female population. Further randomized controlled studies are necessary to confirm our observation.

Reference

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Figure 1. ICO-users had better patient survivals than non-ICO users.

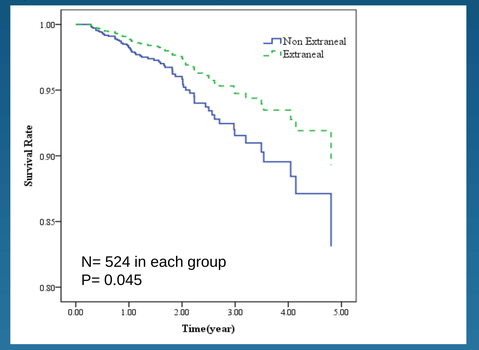
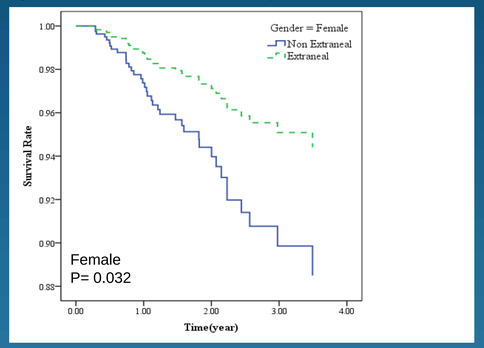


Figure 2. Female ICO users had better patient survivals than non-ICO users, but no difference observed in male patients



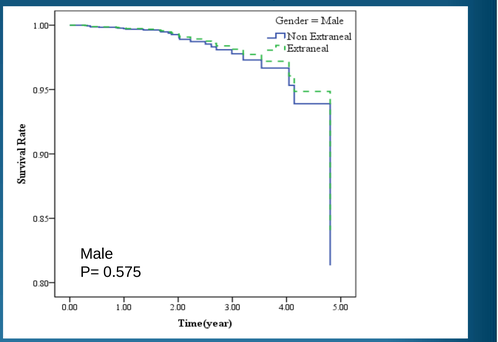


Table 1.Baseline characteristics of study cohort (ICO-users) and control patients (non-ICO users)

		Icodextrin use				
		No (N=524)		Yes (N=524)		
		n	%	n	%	P
Gender						0.354
	Female	268	51.15	252	48.09	
	Male	256	48.85	272	51.91	
Age (years)						0.674
	≦54	246	46.95	256	48.85	
	55～64	119	22.71	122	23.28	
	≧65	159	30.34	146	27.86	
Monthly income (USD)						0.516
	<600	47	8.97	50	9.54	
	600-1000	330	62.98	310	59.16	
	1000-1500	84	16.03	101	19.27	
	＞1500	63	12.02	63	12.02	
Comorbidity						
	CAD	126	24.05	120	22.90	0.716
	CHF	146	27.86	136	25.95	0.531
	DM	238	45.42	235	44.85	0.901
	Hypertension	442	84.35	441	84.16	1.000
	Malignancy	118	22.52	110	20.99	0.600
	AMI	10	1.91	6	1.15	0.450
	Chronic hepatitis	177	33.78	176	33.59	1.000
	CVA	185	35.31	152	29.01	0.034
	PAOD	170	32.44	152	29.01	0.255
	COPD	117	22.33	117	22.33	1.000
	Peritonitis	6	1.15	6	1.15	1.000
	Other CI	95	18.13	84	16.03	0.412

CAD: Coronary artery disease
CHF: Congestive heart failure
DM: Diabetes melliuts
AMI: Acute myocardial infarction
CVA: Cerebral vascular accident
COPD: Chronic obstructive pulmonary disease
PAOD: Peripheral arterial occlusive disease
CI: Catastrophic illness

Table 2. Multivariate regression analysis for mortality risk (Cox model)

	Unadjusted				Adjusted			
	HR	95% CI		P	HR	95% CI		P
		LB	UB			LB	UB	
Icodextrin use								
No	1.00							
Yes	0.60	0.36	0.96	0.040*	0.60	0.37	0.99	0.045*
Gender								
Female	1.00							
Male	0.76	0.46	1.23	0.263	0.88	0.53	1.47	0.631
Age (years)								
≦54	1.00				1.00			
55～64	3.67	1.57	8.60	0.003*	2.69	1.11	6.53	0.029 *
≧65	11.93	5.79	24.57	<0.0001*	7.37	3.25	16.71	<0.0001*
Monthly income (USD)								
<600	1.00				1.00			
600-1000	1.59	0.57	4.44	0.372	1.54	0.55	4.34	0.411
1000-1500	1.44	0.46	4.53	0.531	2.18	0.67	7.11	0.197
＞1500	1.01	0.29	3.58	0.989	0.98	0.27	3.54	0.975
Comorbidity								
None	1.00							
CAD	2.39	1.47	3.88	0.000 *	0.98	0.56	1.70	0.935
CHF	2.83	1.74	4.61	<0.0001*	1.28	0.74	2.21	0.374
DM	3.56	2.06	6.13	<0.0001*	1.56	0.86	2.83	0.143
Hypertension	3.52	0.86	14.37	0.080	2.23	0.53	9.37	0.273
Malignancy	1.14	0.69	1.90	0.607	1.04	0.58	1.86	0.909
AMI	2.24	0.90	5.59	0.085	1.14	0.42	3.07	0.794
Chronic hepatitis	1.18	0.72	1.92	0.512	0.89	0.52	1.51	0.657
CVA	3.65	2.19	6.09	<0.0001*	2.09	1.20	3.64	0.009 *
PAOD	1.65	1.02	2.68	0.042 *	1.00	0.58	1.70	0.986
COPD	1.74	1.06	2.86	0.029*	1.09	0.64	1.85	0.752
Peritonitis	0.67	0.39	1.17	0.16	0.58	0.33	1.03	0.064
Other CI	1.41	0.78	2.54	0.259	1.47	0.76	2.85	0.251

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