ICODEXTRIN IMPROVED PATIENT AND TECHNIQUE SURVIVALS IN HIGH RISK PERITONEAL DIALYSIS PATIENTS - AN ASIAN EXPERIENCE

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Objectives:

Introduction: Glucose load from peritoneal dialysis (PD) solutions has a harmful effect on diabetic and non-diabetic patients. Glucose exposure may contribute to obesity, insulin resistance, dyslipidemia, atherosclerosis, and peritoneal fibrosis. There are still controversies whether long-term daily icodextrin (ICO)-use can improve technique and patient survivals in newly started PD patients.

Aim: To investigate if once-daily- ICO-use be beneficial to certain high-risk Asian PD patients.

Methods:

From January 1, 2007 until December 31, 2011; incident PD patients who survived more than 90 days were prospectively recruited into this program. ICO were prescribed once daily for high risk patients, e.g. if they (1) had diabetes mellitus(DM) and with HbA1C > 7%, or (2) were high transporters, or (3) used high-glucose containing dialysates, e.g. more than half exchanges/day with 2.5% or higher glucose concentration. Patients were followed up until death or loss to follow up or transfer to hemodialysis or transplantation. Patient and technique survivals were compared between ICO and non-ICO users. Kaplan-Meier analysis with log-rank test was used to plot patient and technique survivals. The multivariate Cox regression model was used to calculate the impact of use of ICO on outcomes.

Results:

A total of 306 patients were recruited during 5 year period (Table 1). Among them, 119(38.3%) patients were diabetic and 187 patients were non-diabetic. ICO were used in 89(28.5%) patients. In ICO group, mean treatment time was 19.3±14.2M, mean age was 51.6±15.7y, 53.9% were males and 49.4% were diabetics. During the follow-up period, among 306 patients, 34(10.5%) patients expired and 86(28.1%) patients dropped out (including death 32, transfer to hemodialysis 43, and transplantation 11 patients). Death occurred in 27(12.4%) patients in the non-ICO group compared with 5(5.6%) patients in the ICO group [HR= 3.54 for non-ICO vs.ICO,95% CI:1.34-9.34; P 0.011] (Table 2). In addition, non-ICO group had a significantly higher risk of technique failure when compared to ICO group (HR=3.12; 95% CI, 1.38-7.08; P =0.007) (Table 3). When comparing to less risk non-ICO patients, the use of ICO was associated with better patient (Fig.1) and technique survivals (Fig.2) in high risk patients, regardless of diabetic or non-diabetic status(Fig.3 and Fig4)

Conclusions:

High risk PD patients are expected to have poorer outcomes . However, once-daily-use of ICO in these patients showed better technique and patient survivals when comparing to less risk non-ICO patients, regardless of DM status. Further randomized controlled studies are necessary to confirm our observations.

References:

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Table 1. Demographic and clinical characteristics of 306 incident peritoneal dialysis patients.

	icodextrin		
variable	No (N= 217)	Yes (N= 89)	p value
Age (range:12-8 year)	54.96±16.31	51.58±15.70	0.0979*
<45	59(27.19%)	27(30.34%)	0.5014†
45-65	100(46.08%)	44(49.44%)	
>65	58(26.73%)	18(20.22%)	
Sex			0.4625†
female	110(50.69%)	41(46.07%)	
male	107(49.31%)	48(53.93%)	
PD duration(range:0.25-5 year)	2.07±1.39	2.62±1.34	0.0017*
Etiology of ESRD			0.0120†
CGN	96(44.44%)	23(25.84%)	
CTIN	5(2.31%)	4(4.49%)	
DM	65(30.09%)	44(49.44%)	
Hypertension	37(17.13%)	13(14.61%)	
PKD	7(3.24%)	2(2.25%)	
others	6(2.78%)	3(3.37%)	
Comorbidity			
Cardiovasular disease			0.4165†
No	180(82.95%)	70(78.65%)	
Yes	37(17.05%)	19(21.35%)	
Hypertension			0.0137†
No	76(35.02%)	18(20.22%)	
Yes	141(64.98%)	71(79.78%)	
DM			0.0153†
No	142(65.44%)	45(50.56%)	
Yes	75(34.56%)	44(49.44%)	
PET			
L+LA	78(37.68%)	19(21.59%)	0.0069†
H+HA	129(62.32%)	69(78.41%)	
Total kt/V (range:0.87-4)	1.97±0.51	1.97±0.45	0.9839*
Renal kt/V (range:0-2.99)	0.65±0.50	0.55±0.41	0.0749*
Peritoneal kt/V (range:0.38-2.63)	1.32±0.41	1.42±0.38	0.0517*
nPNA (range:0-2.35)	1.06±0.27	1.00±0.27	0.0963*
Hct (range:0.2-45.1)	29.38±5.09	30.31±4.91	0.1450*
Albumin (range:2.1-4.9)	3.54±0.51	3.60±0.50	0.3341*

Abbreviation: CGN: chronic glomerulonephritis; CTIN: chronic tubulointerstitial disease; DM: diabetes mellitus; PKD: polycystic kidney disease; PET: peritoneal equilibrium test; nPNA: normalized protein nitrogen appearance.
*t-test
†chi-square or Fisher's Exact Test

Table 2. Multivariate Cox model analysis for mortality.

	HR	95%CI	p value
Icodextrin (No vs. Yes)	3.54	(1.34,9.34)	0.0108
DM (vs. non-DM)	3.39	(1.55,7.4)	0.0022
ALB (mg/dL)	0.39	(0.18,0.83)	0.0141

Table 3 Multivariate Cox model analysis for technique failure.

	HR	95%CI	p value
Icodextrin (No vs. Yes)	3.12	(1.38,7.08)	0.0065
DM (vs. non-DM.)	2.27	(1.23,4.19)	0.0084

Figure 1. Overall patient survivals are better in icodextrin group

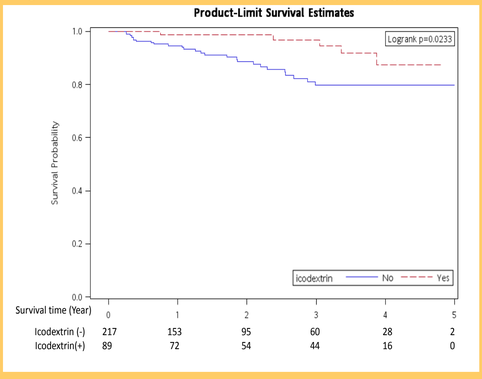

Figure 2. Overall Technique survivals are better in icodextrin group

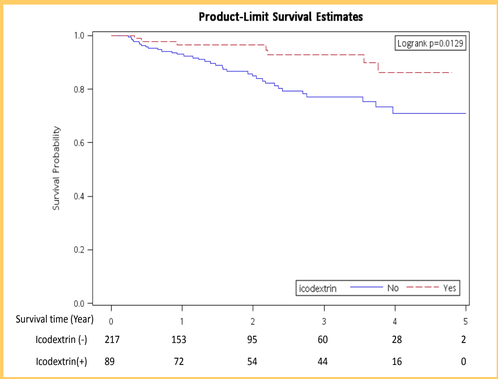

Figure 4. Technique survivals are better in icodextrin users, regardless of DM status

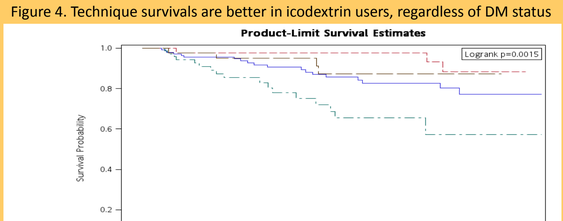

Figure 3. Patient survivals are better in icodextrin users, regardless of DM