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Clinical implications of frailty in peritoneal dialysis patients

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Objectives : Frailty is an age-related condition that predicts adverse outcomes. The study was aimed to investigate the clinical implications of frailty evolution in patients undergoing peritoneal dialysis (PD).
Methods : In this prospective study, all new-onset (<6 months) and prevalent (≧6 months) PD patients completed frailty assessment at entry and 6 months by a semiautomated frailty index of 80 risk factors (FI_{80}) which also contained the 5 components of Fried frailty phenotype. A score ≧13/80 (FI_{80} >0.16) or ≧3/5 (frailty phenotype) was designated to define frailty.
Results : 337 PD patients were recruited (new-onset 23.4%, prevalent 76.6%). Two hundred (59.3%) and 163 (48.4%) patients were frail by FI_{80} and frailty phenotype, respectively. Predictors for frailty were old age, dialysisvintage, diabetes mellitus, gout and sleep disorder. New-onset patients aged <55 years displayed the best evolution of frailty over 6 months (stable or improved, n=29/47, 61.7% by FI_{80}, p=0.0293), compared with other groups. Survival analysis found that frail patients exhibited the worse outcomes (overall death and hospitalization). Poisson regression showed frailty was associated with increased utilizations of outpatient and ER services; however multivariate Cox models identified only diabetes, gout and low body mass index (<19kg/m^2), but not frailty, predicted overall death and hospitalizations.
Conclusions : Frailty is a common medical condition in PD patients, and the status of which can be stabilized or improved in new-onset, young patients at least over the short term. Compared with frailty, certain comorbidities (diabetes and gout) and undernutrition appeared to be more robust in the prediction of adverse outcomes.

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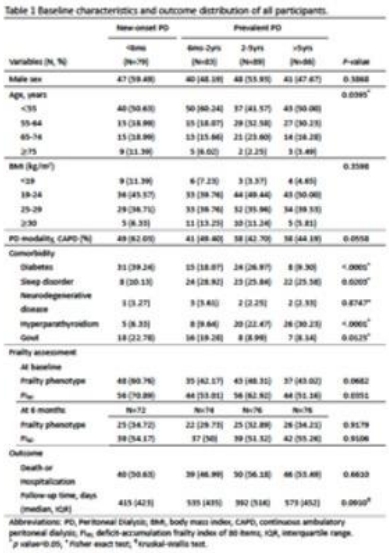

Table 1 Baseline characteristics and outcome distribution of all participants.

Variables (N, %)	New-onset PD <6mo (N=79)	Prevalent PD 6mo-2yrs (N=83)	Prevalent PD 2-5yrs (N=89)	Prevalent PD >5yrs (N=86)	P-value
Male sex	47 (59.49)	40 (48.19)	48 (53.93)	41 (47.67)	0.3868
Age, years					0.0395*
<55	40 (50.63)	50 (60.24)	37 (41.57)	43 (50.00)	
55-64	15 (18.99)	15 (18.07)	29 (32.58)	27 (30.23)	
65-74	15 (18.99)	13 (15.66)	21 (23.60)	14 (16.28)	
≥75	9 (11.39)	5 (6.02)	2 (2.25)	3 (3.49)	
BMI (kg/m²)					0.3598
<19	9 (11.39)	6 (7.23)	3 (3.37)	4 (4.65)	
19-24	36 (45.57)	33 (39.76)	44 (49.44)	43 (50.00)	
25-29	29 (36.71)	33 (39.76)	32 (35.96)	34 (39.53)	
≥30	5 (6.33)	11 (13.25)	10 (11.24)	5 (5.81)	
PD modality, CAPD (%)	49 (62.03)	41 (49.40)	38 (42.70)	38 (44.19)	0.0558
Comorbidity					
Diabetes	31 (39.24)	15 (18.07)	24 (26.97)	8 (9.30)	<.0001*
Sleep disorder	8 (10.13)	24 (28.92)	23 (25.84)	22 (25.58)	0.0205*
Neurodegenerative disease	3 (3.27)	3 (3.61)	2 (2.25)	2 (2.33)	0.8747*
Hyperparathyroidism	5 (6.33)	8 (9.64)	20 (22.47)	26 (30.23)	<.0001*
Gout	18 (22.78)	16 (19.28)	8 (8.99)	7 (8.14)	0.0129*
Frailty assessment					
At baseline					
Frailty phenotype	48 (60.76)	35 (42.17)	43 (48.31)	37 (43.02)	0.0662
FI_{80}	56 (70.89)	44 (53.01)	56 (62.92)	44 (51.16)	0.0351
At 6 months	N=72	N=74	N=76	N=76	
Frailty phenotype	25 (34.72)	22 (29.73)	25 (32.89)	26 (34.21)	0.9179
FI_{80}	39 (54.17)	37 (50)	39 (51.32)	42 (55.26)	0.9106
Outcome					
Death or hospitalization	40 (50.63)	39 (46.99)	50 (56.18)	46 (53.48)	0.6610
Follow-up time, days (median, IQR)	415 (423)	535 (435)	392 (516)	573 (452)	0.0910#

Abbreviations: PD, Peritoneal Dialysis; BMI, body mass index; CAPD, continuous ambulatory peritoneal dialysis; FI_{80}, deficit-accumulation frailty index of 80 items; IQR, interquartile range.
* p value<0.05, † Fisher exact test, ‡ Kruskal-Wallis test.

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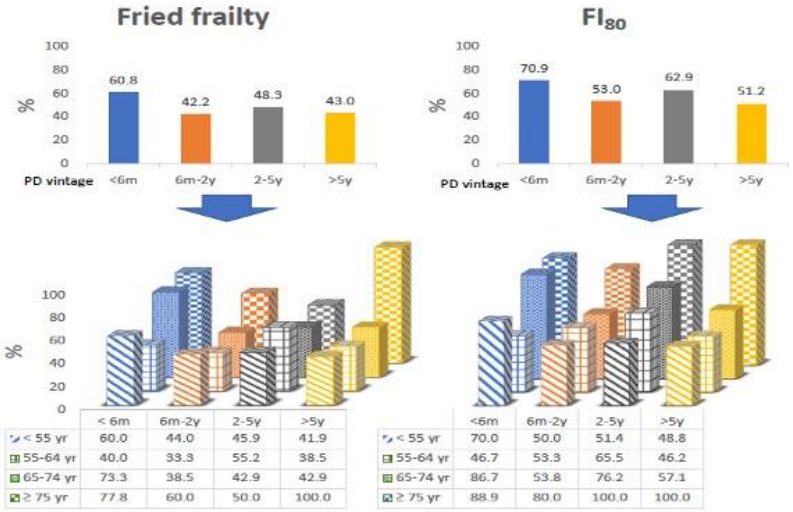

	< 6m	6m-2y	2-5y	>5y
< 55 yr	60.0	44.0	45.9	41.9
55-64 yr	40.0	33.3	55.2	38.5
65-74 yr	73.3	38.5	42.9	42.9
≥ 75 yr	77.8	60.0	50.0	100.0

	<6m	6m-2y	2-5y	>5y
< 55 yr	70.0	50.0	51.4	48.8
55-64 yr	46.7	53.3	65.5	46.2
65-74 yr	86.7	53.8	76.2	57.1
≥ 75 yr	88.9	80.0	100.0	100.0