EXCESS WEIGHT GAIN DURING THE FIRST YEAR OF PERITONEAL DIALYSIS IS A RISK FACTOR FOR A RAPID DECREASE IN RESIDUAL RENAL FUNCTION

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OBJECTIVES

Significant weight gain is a potential problem in most patients starting peritoneal dialysis (PD).

However, there are few studies on the clinical effect of increased body weight (BW) during PD.

We evaluated the effect of excess weight gain during the first year after PD on residual renal function (RRF).

METHODS

A total of 148 incident PD patients were analyzed in a longitudinal observational study.
The mean follow-up length was 23.8 months.
RRF was measured at baseline (within one month of starting PD) and thereafter at six-month intervals for two to three years or until loss of RRF.
BW measurements were performed at the time of RRF measurement.
Excess weight gain was defined as an increase in BW over the median value.

The primary outcome of this study was to compare the slope of RRF decline based on excess weight gain during the first year of PD. The secondary outcome was to evaluate the effect of excess weight gain on the loss of RRF.

Figure and Table

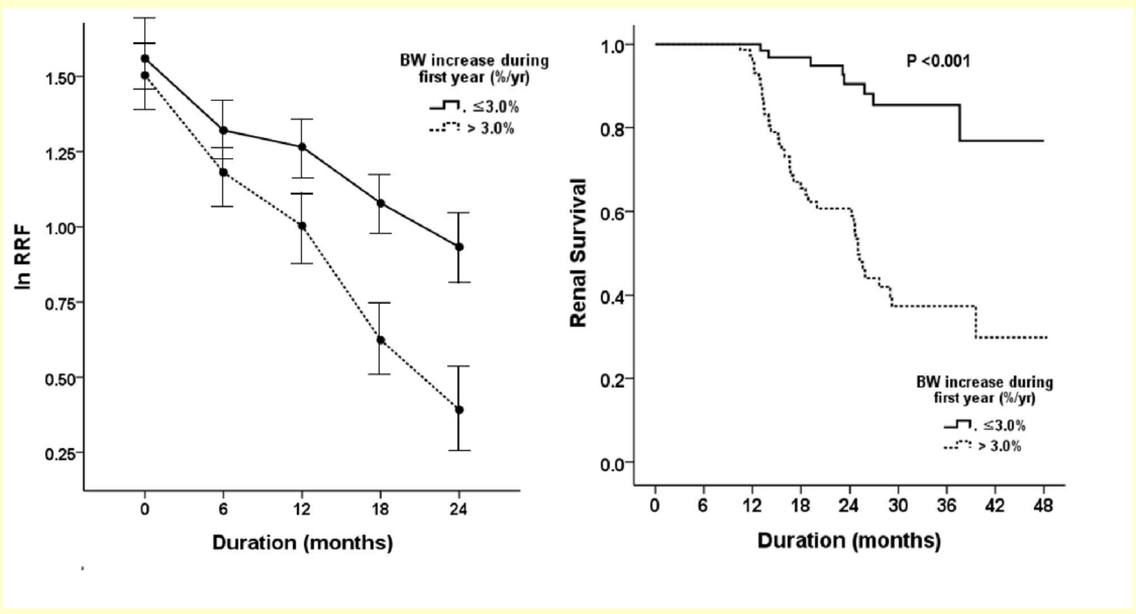

Figure 1. (Left) Effect of excess BW gain on changes in log RRF. RRF decline was significantly faster in patients with an excess BW gain (BW increase >3.0% during the first year of PD). (Right) Kaplan-Meier estimates for renal survival. Excess BW gain was a main predictor of RRF loss.

Table 1. Factors predicting RRF loss in incident PD patients

Factors	Unadjusted		Adjusted*	
	Hazard ratio (95% CI)	P	Hazard ratio (95% CI)	P
Age (per 1year)	1.01 (0.98-1.03)	0.643	-	-
Gender (male/female)	1.49 (0.81-2.75)	0.198	-	-
SBP (per 10 mmHg)	1.20 (1.09-1.41)	0.004	1.02 (1.01-1.03)	0.018
DBP (per 10 mmHg)	1.14 (1.04-1.48)	0.038	-	-
Diabetes (presence)	3.13 (1.62-6.03)	0.001	2.32 (1.15-4.66)	0.019
BMI (per 1 kg/m^2)	0.96 (0.88-1.05)	0.383	-	-
HDL (per 10 mg/dL)	0.85 (0.70-1.05)	0.127	-	-
TG (per 10 mg/dL)	1.03 (0.99 - 1.07)	0.091	-	-
RRF at baseline (per 1 mL/min/1.73m^2)	0.77 (0.64-0.87)	<0.001	0.80 (0.68-0.95)	0.003
ln UPCR (per 1 g/g)	1.93 (1.41-2.63)	<0.001	1.60 (1.14-2.26)	0.007
BW increase (per 1%/yr)	1.23 (1.14-1.31)	<0.001	1.23 (1.13-1.33)	<0.001

Abbreviations: SBP; systolic blood pressure, DBP; diastolic blood pressure; BMI; body mass index, HDL: high-density lipoprotein, TG; triglyceride; hs-CRP; RRF; residual renal function, UPCR; urine protein-to-creatinine ratio

* adjusted for SBP, DBP, BMI, UPCR, RRF at baseline, and BW increase (%)

Results

The median one-year increase in BW was 2.3kg (IQR, 1.01–4.58) or 3.0% (IQR, 1.13–5.31). The mean slope of RRF decline was –0.068 ± 0.053 mL/min/month/1.73m^2, and RRF loss was observed in 48 participants within a mean duration of 19.4 ± 6.8 months.

Patients with a BW increase of greater than 3.0% showed a significantly increased rate of RRF decline compared to those without excessive weight gain (p<0.001) (Fig 1), and BW increase (%/yr) correlated significantly with the RRF decline rate.

High systolic blood pressure, the presence of diabetes, a lower baseline RRF, high levels of proteinuria and increased BW (%/yr) were significant determinants of RRF decline on multivariate analysis (Table 1). Excess weight gain was associated with a 2.7-fold increase in the risk of RRF loss (95% confidence interval, 1.40-5.19; p<0.001).

CONCLUSIONS

Excess weight gain associated with initiation of PD was closely linked to a rapid decline in RRF. Strict weight control may be essential for preservation of RRF in incident PD patients.

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