

DETERMINANTS OF RESIDUAL RENAL FUNCTION COURSE DURING INCREMENTAL PERITONEAL DIALYSIS

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INTRODUCTION :

The incremental dose strategy is increasingly used in patients (pts) starting peritoneal dialysis (PD), due to patient/care provider preference and a satisfactory clinical outcome. Pivotal to the outcome of incremental peritoneal dialysis (iPD) is residual renal function (RRF) maintenance.

Aim of the present prospective observational cohort study was to investigate the course of RRF in pts starting iPD in relation with factors regarded as possibly affecting it, such as baseline patient's characteristics, CKD progression prior to dialysis initiation, PD modality (automated vs manual), PD ultrafiltration, UF rate, diuretics and angiotensin converting enzyme inhibitor (ACEi) or angiotensin receptor blockers (ARBs) use and peritonitis rate.

MATERIAL AND METHODS:

Our study was performed in incident PD patients with at least 1 year pre dialysis follow up and in whom, after PD start, the peritoneal contribution to overall adequacy was less than the renal one. After iPD start further PD prescription adjustments were addressed to meet commonly accepted adequacy target (total urea $wKt/V \geq 1.7$ and $wCrCl \geq 45L/1.73 m^2$). Data on RRF, RRF loss rate, UF rate, diuresis, PD and renal clearances, peritonitis rate, diuretics and ACEi/ARBs use, were collected quarterly during the regular scheduled visits to the clinic. The possible impact of the factors studied was investigated by univariate and multivariate regression analysis. Student T test and Mann Whitney were used as appropriated for group comparisons.

RESULTS:

Twenty five pts (57 ± 17 years, M/F: 16/9) have at least one year iPD follow up, fifteen of them have reached two years (54 ± 17 years, M/F:12/3). Nineteen pts started with manual PD, 6 with nightly APD. RRF loss significantly decreased after iPD start, up to two years of follow up (0.57 ± 0.4 vs 0.2 ± 0.2 ml/min/month, $p = 0.01$, fig.1) without appreciable differences between pts starting with manual or automated iPD (0.2 ± 0.6 vs 0.16 ± 0.4 , $p=0.6$, fig 2), and regardless of predialysis CKD progression, basal RRF, PD starting dose, peritoneal clearances, ACEi/ARBs and diuretics use.

Despite significantly higher UF in APD pts (690 ± 351 vs 245 ± 208 $p < 0.0001$), RRF loss rate was not different compared to manual PD. The use of ACEi/ARBs did not affect RRF loss rate, while it was associated with higher UF rate (492 ± 360 vs 312 ± 300 , $p=0.01$). This finding, however was no longer significant when PD modality was taken into account.

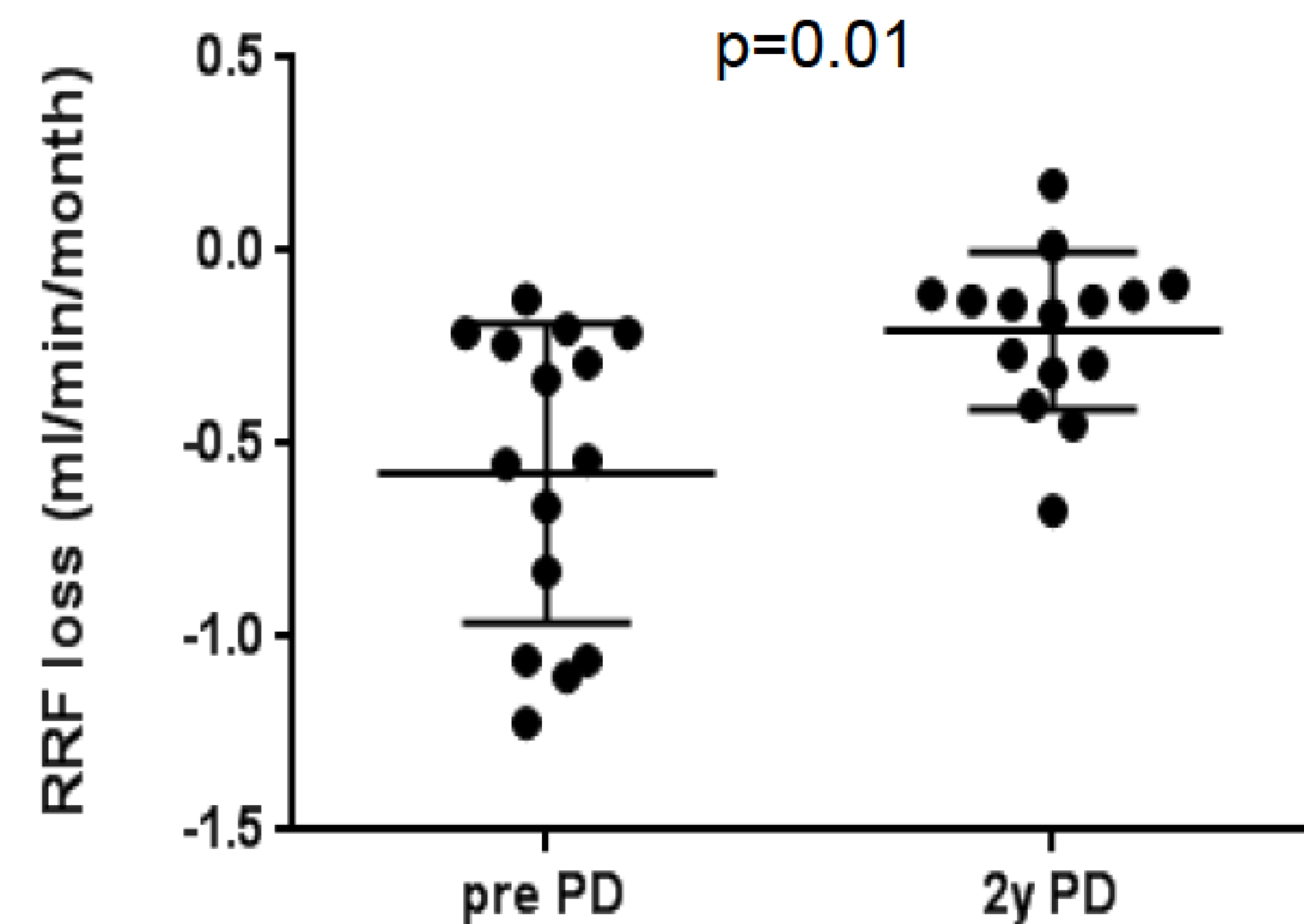


Fig.1: comparison between RRF decline 1 year pre-PD vs 2 years after iPD start.

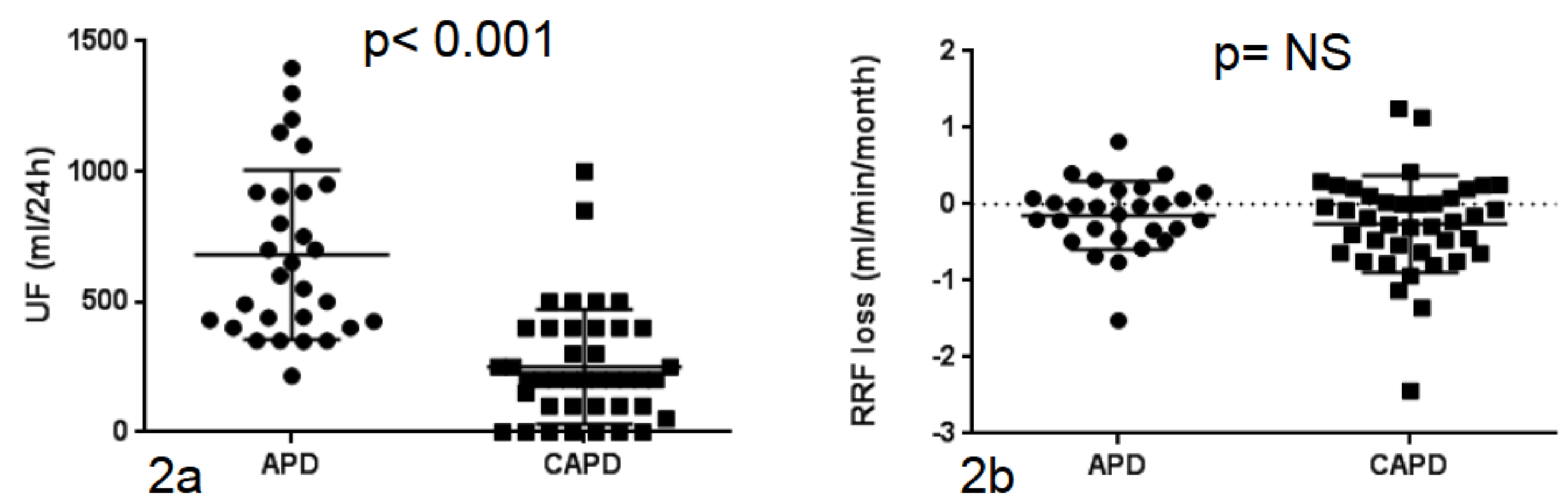


Fig.2: comparison between APD and CAPD.
2a: UF rate is significantly higher in APD pts compared with CAPD;
2b: RRF rate of decline is not different between APD and CAPD

CONCLUSIONS:

Initiation of iPD is associated with a significant reduction of RRF loss, regardless of basal RRF, predialysis CKD progression, PD modality and starting dose, peritoneal clearances, UF rate, ACEi/ARBs and diuretic use and peritonitis incidence. Despite pts on APD had higher UF rate and less diuresis, they did not lose RRF faster than pts on manual PD.