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Background

Cognitive function (CF) is essential for adherence, self-care, and decision-making abilities in ESRD [1]. With decreasing renal function, CF is likely to decline, with cognitive dysfunction improving after initiation of dialysis and even being generally reversible after successful renal transplantation [2,3]. However, little is known about changes in CF during early-phase dialysis, particularly regarding different treatment modalities. This multicenter study focused on the long-term course of CF, comparing peritoneal dialysis (PD) to hemodialysis (HD) patients.

Methods

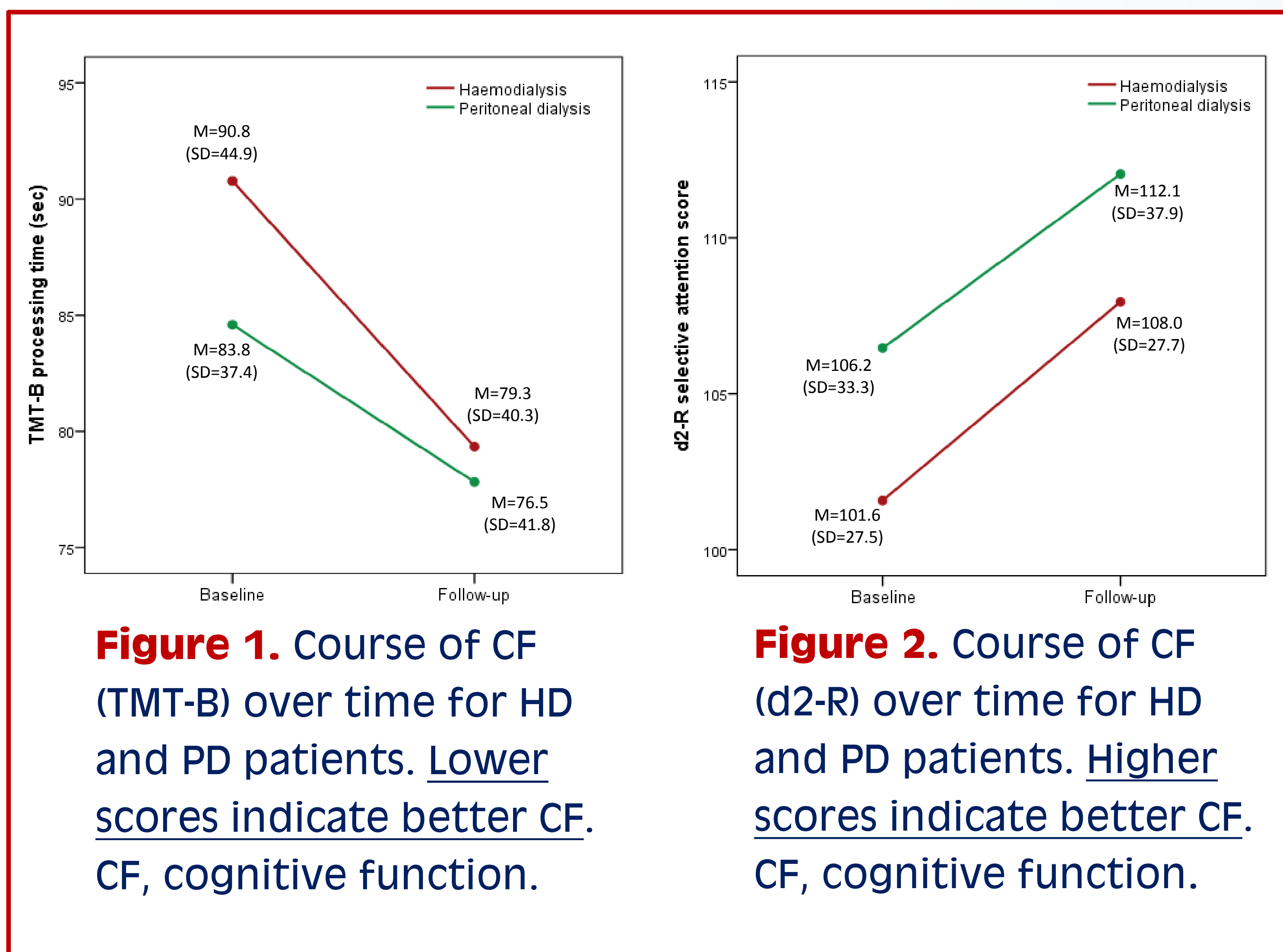
Within the CORETH-project, two well-validated cognitive tests (CT), assessing executive functions (TMT-B [4]) and attention (Test d2 [5]); as well as the self-reported Kidney Disease Quality of Life Short Form Cognitive Function subscale (KDQOL-CF [6]) were administered to a sample of 271 patients at baseline and again at one-year follow-up. The subsamples were matched by propensity score, adjusting them for age, comorbidity, education, and employment status. Cases with complete data (HD = 96 and PD = 103) were compared. The effects of time and treatment modality were investigated while controlling for well-known confounders: age, comorbidity, education level, employment status, depression, and psychotropic drug intake.

Results

Results (Table 1, Figures 1 and 2) from both CTs showed that CF improved over one year, with PD treatment predicting better CF than HD. The opposite pattern applied to the self-reports: CF estimates declined by tendency with HD stating better CF than PD patients. A higher depression level had a significant negative impact on patients' self-ratings but not on the CTs.

Cognitive indicator	Time (Follow-up vs. Baseline)	Treatment (PD vs. HD)
TMT-B	$B = -9.29, p < 0.001$ 95% CI [-12.98;-5.60]	$B = -9.38, p = 0.04$ 95% CI [-18.31;-0.45]
d2-R	$B = 6.19, p < 0.001$ 95% CI [4.09;8.29]	$B = 7.45, p = 0.05$ 95% CI [0.06;14.83]
KDQOL-CF	$B = -1.49, p = 0.14$ 95% CI [-3.44; 0.47]	$B = 3.34, p = 0.04$ 95% CI [0.22;6.56]

Table 1. Parameter estimates for cognitive indicators



A higher age and a lower education level had a significant negative effect on test performance but not on the self-report. Moreover, a higher comorbidity score negatively influenced TMT-B results. There was no evidence for effects of employment status or psycho-tropic drug intake on any of the cognitive outcomes.

Conclusions

This study, for the first time, casts light on long-term CF in HD vs. PD patients during early dialysis while controlling for well-known confounders. Both groups show improvement over one year, with PD treatment predicting better executive functioning and attention abilities than HD. For the self-reported CF, the opposite pattern applies, possibly due to the nature of the assessment method. Our longitudinal findings underpin the beneficial effects of dialysis on CF and strengthen previous indications of PD being associated with better CF than HD.

Project management

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