INFLUENCE OF ERYTROPOIETIN ON COGNITIVE FUNCTION IN MAINENTANCE HEMODIALYSIS PATIENTS

Josipa Radić[1], Mislav Radić[2], Vedran Kovačić [3], Katarina Dodig-Ćurković [4],Milenka Šain[1], Dragan Ljutić[1]

[1]Department of Nephrology and Dialysis, University Hospital Centre Split, Split, Croatia; [2]Department of Rheumatology and Clinical Immunology, University Hospital Centre Split, Split, Croatia; [3]Department of Intensive care and Clinical Pathophysiology of University Hospital Centre Split, Split, Croatia; [4]Department of Psychiatry, University Hospital Osijek, Osijek, Croatia

OBJECTIVES

Cognitive impairment is common among maintenance hemodialysis (HD) patients. Anemia has been identified as a risk factor for cognitive impairment but little is known about influence of erythropoietin dose on cognitive functions before and after HD. Symbol Digit Modalities Test (SDMT), Trail Making Test, form A (TMT A) and Complex Reactiometer Drenovac (CRD series), a battery of computer generated psychological tests were used to assess relationship between erythropoietin and cognitive function in maintenance HD patients.

METHODS

A selected population of 50 (aged 61.40±10.84 years) adult patient on HD (3.80±2.82 years) were investigated. Data of EPO administration usage per week (EPO_week) and EPO administration usage per week per kg of body weight (EPO_week_kg) were assessed from patient's records 3 weeks retrospectively before cognitive testing. Assessment of cognitive functions was performed one hour before and one hour after HD by CRD to measure short-term memory and convergent thinking. Results of CRD-series tests were given as total time of test solving (TT) and minimum time of test item solving (MT). Higher CRD-series tests scores (TT and MT measured in seconds) indicate poorer cognitive performance. SDMT was used to measure oculomotor abilities and hand-eye coordination. Higher SDMT score indicated better cognitive performance. Furthermore, TMT A measure attention, visual scanning, motor speed and planning ability. Lower scores indicating better cognitive function.

Table 1 Correlations between erythropoietin and cognitive performance among all subjects (Pearson correlation coefficient, one-tailed significance level), significant correlations are marked).

		EPO _weekly		EPO_weekly_kg	
Test	Test results	Correlation coefficient	P	Correlation coefficient	p
Test of short-term memory actualization	Pre_HD_TT	-0.247	0.042*	-0.246	0.040*
	Pre_HD_MT	-0.330	0.010*	-0.335	0.010*
	Post_HD_TT	-0.260	0.037*	-0.261	0.040*
	Post_HD_MT	-0.264	0.035*	-0.250	0.040*
Test of convergent thinking	Pre_HD_TT	-0.263	0.044*	-0.210	0.090
	Pre_HD_MT	-0.264	0.044*	-0.210	0.090
	Post_HD_TT	-0.381	0.006*	-0.329	0.020*
	Post_HD_MT	-0.265	0.043*	-0.316	0.020*
Trail Making Test, form A	Pre_HD_TT	-0.262	0.033*	-0.230	0.060
	Post_HD_TT	-0.280	0.025*	-0.287	0.020*
Simbol Digit Modalities Test	Pre_HD_score	0.379	0.004	0.401	<0.001*
	Post_HD_score	0.350	0.008	0.336	0.010*

Legend: p, significance; *p < 0.05; EPO _week, total weekly dose of erythropoietin; EPO_week_kg, weekly dosage of erythropoietin per kg of body mass; Pre_HD_TT, pre hemodilalysis total test solving time; Pre_HD_MT, pre hemodialysis minimum time of item solving; Post_HD_TT, post hemodilalysis total test solving time; Post_HD_MT, post hemodialysis minimum time of item solving

RESULTS

Statistically significant negative correlations between total EPO_weekly dose and cognitive test scores were found. Also, statistically significant negative correlations between EPO_weekly_kg and cognitive test scores were found as presented in Table 1. Those HD patients with higher EPO_weekly and EPO_weekly_kg dose performed better on cognitive testing.

CONCLUSIONS

The results demonstrated that higher EPO dose is correlated with better cognitive performance. Future research should continue to examine which cognitive domains are particularly related to EPO treatment.

53 ERA
317--SP
Chronic Kidney Disease. Anaemia.
Josipa Radic
DOI: 10.3252/pso.eu.53era.2016
ePosters supported by F. Hoffmann- La Roche Ltd.
53rd CONGRESS ERA-EDTA VIENNA AUSTRIA MAY 21st-24th 2016
Held jointly with Österreichische Gesellschaft für Nephrologie
PosterSessionOnline.com