

Neurocognitive outcomes of head and neck chemoradiotherapy: A pilot study.

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Abstract:

Background: Evidence suggests cancer-related treatments affect cognition. To our knowledge, no studies have systematically investigated cognitive impairment in head and neck cancer (HNC) patients (pts). We assessed ten relapse-free HNC pts after curative-intent radiotherapy (RT), half of whom received cisplatin (Cp). **Methods:** Pts completed a 2-hr battery of tests/questionnaires assessing objective cognitive function (CF), subjective CF, quality of life and affect. Objective measures of CF were transformed to Z-scores (mean=0, standard deviation=1) using age normative data. A negative value for the Difference Score (DS=Z-score minus IQ score) in each tested domain indicates cognitive deterioration as IQ is a pre-morbid estimate of pts' CF. A Global Deficit Score (GDS) was obtained by averaging the DS of all tested CF domains. **Results:** Pt demographics were: M:F=8:2; mean age=58 yrs(range 47-66); mean smoking pack yrs=15(0-45); mean drinks/week=7(0-25); mean IQ Z-score=+1.2(-1.0 to +2.0), mean school yrs=15 (6-18) and mean time post treatment=20 mo(9-41). All pts completed the battery within 2 hr. Nine participants appeared to have impaired CF based on negative DS and GDS scores (Table 1). Exploratory univariate analyses showed trends that higher RT dose and Cp use were associated with increased impairment but cytokines, anemia, hormonal status and affective state were not. **Conclusions:** This feasibility study suggests cancer-related treatment affects cognition in HNC survivors. A longitudinal study is underway.

Pt	Max. brain RT dose (Gy)	Cp (mg)	IQ	DS						
				Language	Memory encoding	Memory retention	Attention	Processing speed	Executive function	GDS
1	41	0	+1.88	-0.99	-2.03	-1.37	-0.52	-0.83	-0.76	-0.97
2	0.17	0	-0.50	-2.45	-0.10	-1.55	+0.23	+0.31	-0.18	-0.70
3	33	0	-1.00	+0.40	-1.62	+0.59	+0.38	+0.90	+0.10	+0.32
4	39	0	+1.99	-1.44	-2.14	-1.05	-0.98	-1.49	-1.61	-1.41
5	51	0	+1.88	-1.15	-3.47	-1.40	-1.50	-1.55	-1.08	-1.47
Mean	33	0	+0.85	-1.13	-1.87	-0.96	-0.48	-0.53	-0.71	-0.85
6	45	600	+1.17	-0.99	-1.54	-1.79	-0.13	-1.04	-1.50	-1.14
7	51	480	+1.88	-1.32	-2.74	-2.39	-1.85	-1.59	-1.59	-1.76
8	44	495	+1.36	-1.40	-1.00	-0.96	-2.21	-2.04	-1.52	-1.59
9	58	432	+1.16	-1.09	-2.47	-1.95	-0.92	-1.39	-0.85	-1.30
10	54	540	+1.70	+0.40	-0.59	-1.15	-0.34	-1.39	-0.67	-0.61
Mean	50	509	+1.45	-0.88	-1.67	-1.65	-1.09	-1.49	-1.27	-1.28