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Lung

Randomised Phase III Trial of Prophylactic Cranial Irradiation With or Without Hippocampal Avoidance for Small-Cell Lung Cancer (PREMER): A GICOR-GOECP-SEOR Study.

Rodríguez de Dios N, Couñago F, Murcia-Mejía M, Rico-Oses M, Calvo-Crespo P, Samper P, Vallejo C, Luna J, Trueba I, Sotoca A, Cigarral C, Farré N, Manero RM, Durán X, Gispert JD, Sánchez-Benavides G, Rognoni T, Torrente M, Capellades J, Jiménez M, Cabada T, Blanco M, Alonso A, Martínez-San Millán J, Escribano J, González B, López-Guerra JL.

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PURPOSE

Radiation dose received by the neural stem cells of the hippocampus during whole-brain radiotherapy has been associated with neurocognitive decline. The key concern using hippocampal avoidance-prophylactic cranial irradiation (HA-PCI) in patients with small-cell lung cancer (SCLC) is the incidence of brain metastasis within the hippocampal avoidance zone.

METHODS

This phase III trial enrolled 150 patients with SCLC (71.3% with limited disease) to standard prophylactic cranial irradiation (PCI; 25 Gy in 10 fractions) or HA-PCI. The primary objective was the delayed free recall (DFR) on the Free and Cued Selective Reminding Test (FCSRT) at three months; a decrease of three points or greater from baseline was considered a decline. Secondary end points included other FCSRT scores, quality of life (QoL), evaluation of the incidence and location of brain metastases, and overall survival (OS). Data were recorded at baseline, and 3.0, 6.0, 12, and 24 months after PCI.

RESULTS

Participants' baseline characteristics were well balanced between the two groups. The median follow-up time for living patients was 40.4 months. Decline on DFR from baseline to three months was lower in the HA-PCI arm (5.8%) compared with the PCI arm (23.5%; odds ratio, 5; 95% CI, 1.57 to 15.86; P = .003). Analysis of all FCSRT scores showed a decline on the total recall (TR; 8.7% v 20.6%) at three months; DFR (11.1% v 33.3%), TR (20.3% v 38.9%), and total free recall (14.8% v 31.5%) at six months, and TR (14.2% v 47.6%) at 24 months. The incidence of brain metastases, OS, and QoL were not significantly different.

CONCLUSION

Sparing the hippocampus during PCI better preserves cognitive function in patients with SCLC. No differences were observed with regard to brain failure, OS, and QoL compared with standard PCI.