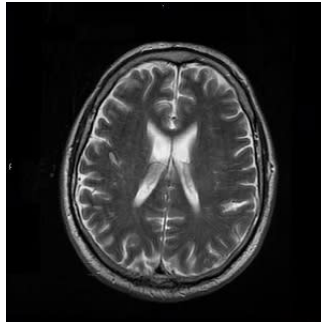

Stereotactic Radiotherapy for Small Cell Lung Cancer Brain Metastases



The objective of this First-line Radiosurgery for Small-Cell Lung Cancer (FIRE-SCLC), multicenter cohort study was to compare treatment outcomes of first-line stereotactic radiosurgery (SRS) with first-line whole-brain radiotherapy (WBRT) in 710 patients from 28 centers who had small cell lung cancer (SCLC) brain metastases.

Stereotactic radiosurgery (SRS) refers to techniques that allow probes to be positioned in a way that targets specific areas in the brain instead of irradiating the whole brain, as is the case with whole-brain radiotherapy (WBRT).

Several Phase-3 randomised controlled trials have established SRS to be an effective first-line treatment in limited brain metastasis. The RCTs also showed that the addition or absence of WBRT did not offer any advantage in survival rates and, hence, further established SRS as a treatment of choice. Since these RCTs did not include SCLC brain metastases patients in the trials, they were the only ones that continued to be treated with traditional WBRT.

While whole-brain radiotherapy (WBRT) offered a better central nervous system (CNS) control, it also exerted much more widespread toxic side effects on cognition and overall quality of life.

The purpose of this study was to measure if SRS can singlehandedly offer better overall survival, time to nervous system progression (TTCP) and CNS progression-free survival (PFS). The outcomes were compared in patients after carefully adjusting for other variables such as age, sex, number of brain metastases, synchronicity, and year of treatment.

Study results showed that stereotactic radiosurgery (SRS) performed as hypothesised and established in previous trials. Results were most promising in cases with single brain metastasis. SRS did have the known disadvantage of shorter time to CNS progression.

Summary of Study Findings

1. The median overall survival was 8.5 months
 - a. 11 months for 1 lesion
 - b. 8.7 months for 2 to 4 lesions
 - c. 8.0 months for 5 to 10 lesions, and
 - d. 5.5 months for 11 or more lesions.
2. The median time to CNS progression was 8.1 months.
3. The median CNS PFS was 5.0 months
4. Whole-brain radiotherapy had better time to CNS progression.
5. Overall, there was no difference in terms of overall survival.

In terms of strength, the study had several such as an impressive cohort size with patients from six countries; access to individual patient data

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from the WBRT cohort for comparative analysis; use of multiple analytic methods such as competing and semi-competing risk modeling, propensity score matching and multivariable adjustment.

In terms of weaknesses, the study's retrospective design made all analyses subject to confounding due to variables being unquantified. Similarly, data on quality of life, cognitive function, and burden of CNS disease was not available for analysis. The practice of documenting follow-up MRIs was less prevalent in the WBRT cohort that may have led to the observation of WBRT having better CNS control.

In conclusion, the study provides support that SRS can be used as a first-line treatment in a select population of patients with small-cell lung cancer.

Source: [JAMA Oncology](#)

Image Credit: pxfuel

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