CASE STUDY · ONCOLOGY

Phase III NSCLC Brain Metastases Trial With 6,000 Neuroradiology Assessments

6,000+ neuroradiology assessments · Contrast-enhanced brain MRI · RANO-BM intracranial response

Challenge

Intrinsic Imaging supported this study's imaging activities, addressing the scientific and operational considerations that inform the work of an imaging CRO and imaging core lab. An international Phase III trial of a novel treatment for brain metastases from non-small cell lung cancer required more than 6,000 neuroradiology assessments of intracranial response. Brain metastases are small, often numerous, and susceptible to measurement variability from slice thickness, contrast timing and field strength, so small differences in acquisition or reader technique could change response categories and distort the intracranial progression-free survival endpoint.

The sponsor also needed intracranial and extracranial disease assessed under separate criteria within one workflow, and needed radiation necrosis and treatment effect distinguished from true progression. With a large read volume and a fixed analysis timeline, the trial required a neuroradiology team deep enough to sustain throughput without sacrificing consistency. The interpretive challenge extends beyond detecting a change: the assessment must distinguish a reproducible imaging observation from a confident attribution to active disease. Treatment-related abnormalities can remain ambiguous even when acquisition is technically adequate and readers apply the same criteria.

Intrinsic Imaging's Solution

Intrinsic Imaging wrote the imaging charter with a standardized brain MRI protocol specifying thin-slice post-contrast 3D T1 acquisitions, consistent contrast dose and timing, and sequence requirements for assessing treatment effect. Sites were qualified against the protocol with phantom and test-patient submissions, and acquisition deviations were fed back to sites within two business days of receipt. Thin-slice imaging and consistent contrast administration address technical influences on the apparent boundaries of small metastases. Qualification submissions test conformity with those requirements, while feedback provides a basis for correcting acquisition departures before they recur.

The company's nine full-time, fellowship-trained neuroradiologists performed blinded independent double reads of intracranial disease under RANO-BM criteria, with adjudication on every discordant response assessment. Extracranial disease was assessed under RECIST 1.1 by the oncology team using the same timepoint schedule, and the two assessments were reconciled within a single data structure so the sponsor received a unified response record per patient. Maintaining distinct intracranial and extracranial criteria preserves the disease-specific meaning of each assessment. Their reconciliation into a common record is an organizational step, not evidence that response in either compartment predicts response in the other.

Reader training used a reference set of brain-metastasis cases spanning the ambiguity range from clear response to suspected radiation necrosis, and inter-reader agreement was monitored at planned intervals across the trial. Project managers tracked read volumes against the enrollment curve so that reader capacity scaled ahead of demand. Training across ambiguous cases makes the charter's interpretive boundaries explicit. Agreement monitoring assesses their consistent application over time, but high agreement cannot independently distinguish radiation injury from recurrent tumor in every equivocal lesion.

Intrinsic Imaging’s Results

- More than 6,000 intracranial assessments completed by a dedicated nine-neuroradiologist team under blinded double reads with adjudication
- Standardized thin-slice 3D T1 protocol adopted at 78 sites in 14 countries, reducing unevaluable intracranial timepoints to under 3%
- Intracranial RANO-BM and extracranial RECIST 1.1 assessments delivered as a unified per-patient response record for the sponsor's statistical analysis
- Inter-reader agreement on progression status held above 90% at each monitoring interval across the multi-year program

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Read the full study online: https://intrinsicimaging.com/case-studies/oncology-nsclc-brain-mets-2017

About Intrinsic Imaging, LLC

Intrinsic Imaging is an ISO certified medical imaging CRO and imaging core lab providing comprehensive services in support of Phase I-IV clinical trials and Class I, II, III medical device trials. Intrinsic Imaging is also a world leader in conducting Artificial Intelligence studies. With its team of more than 50 board-certified and fellowship-trained physicians, Intrinsic Imaging’s team has sub-specialization in all therapeutic areas, including Cardiovascular, Central Nervous System,Gastroenterology, Musculoskeletal, Oncology and Ophthalmology. Certified by the British Standards Institution (BSI), Intrinsic Imaging is the only company in the world to hold five ISO certifications specifically for providing imaging core lab services on clinical trials. For more information, please visit www.IntrinsicImaging.com.

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