Docket #: S23-549

Stereotactic irradiation for lung volume reduction (SILVR) in severe emphysema

Stanford researchers have identified an appropriate method and dosage for radiotherapy-based noninvasive lung volume reduction to treat severe emphysema.

Emphysema is a type of chronic obstructive pulmonary disease characterized by irreversible damage to the lung's air sacs. Severe emphysema can be treated with lung volume reduction surgery, which involves resection of the affected areas. However, many patients are not candidates for this invasive procedure. An existing less invasive treatment option, bronchoscopic endobronchial valve placement, is often ineffective due to collateral ventilation through damaged airways.

To develop an alternative, Stanford researchers have repurposed stereotactic ablative radiotherapy, commonly used to treat acute lung cancer. Irradiation can noninvasively induce scarring in the treated lung tissue, resulting in volume reduction. Through a phase I clinical trial in severe emphysema patients, optimal strategies for radiation dose distribution and patient selection were determined. Stereotactic irradiation for lung volume reduction (SILVR) has the potential to become a noninvasive and efficacious treatment option for patients with severe emphysema.

Stage of Development
Phase I clinical trial

Applications

- Treatment for severe emphysema
    - Focused emphysematous tissue
    - Homogeneous tissue damage across the lung

Advantages

- Noninvasive
- Efficacious
- Uses existing radiotherapy devices and techniques

Publications

- Kamtam, D. N., Binkley, M. S., et al. (2024). First in human Phase I Clinical Trial of Stereotactic Irradiation to Achieve Lung Volume Reduction (SILVR) in Severe Emphysema. *International Journal of Radiation Oncology, Biology, Physics, S0360-3016*(24)00479-6. Advance online publication.

Patents

- Published Application: WO2025212811

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