Award ID:
RP150386

Project Title:
A Phase I Trial of Stereotactic HYpofractionateD RadioAblative (HYDRA) Treatment of Advanced Laryngeal Cancer

Award Mechanism:
Individual Investigator

Principal Investigator:
Phan, Jack

Entity:
The University of Texas M.D. Anderson Cancer Center

Lay Summary:

Laryngeal cancer is the most common throat cancer in the U.S. Chemoradiation is standard-of-care for advanced disease. Seven weeks of daily treatments are needed for this. Treatment is costly and toxic. Over a quarter of patients suffer local recurrence within 5 years, and over half ultimately lose their voicebox. No significant advances have been made for this cancer in several decades. Patients deserve more potent therapy which spares throat function. We hypothesize that stereotactic body radiation (SBRT) will achieve this goal.

We will lead a phase I dose-escalation trial of SBRT given in five treatments over 11/2 weeks for advanced laryngeal disease at UT Southwestern and UT M.D. Anderson Cancer Center. Our techniques build from our experience with early laryngeal cancer SBRT, and will mirror anatomic principles used for voice-preserving surgery. We will limit treatment only to tissues directly involved with cancer, while employing rigorous follow-up and surgical salvage policies.

Important goals of this clinical trial will include 1) the first demonstration of safe SBRT delivery for advanced larynx cancer, 2) reduced toxicity from protecting uninvolved neck tissues from treatment, 3) improved disease control with large-dose treatments to primary tumor, and 4) abbreviation of treatment by several weeks, economically benefiting rural Texans living at distance from specialty care.

SBRT requires precise tolerances to safely deliver large doses to small regions. We will evaluate a new computing platform we have designed for ultra-fast quality assurance. We will first validate a new image registration method, and then incorporate it into a complete software platform designed to automatically detect unintended changes in delivered doses. Validation of this pilot work will allow us to go on to test immediate SBRT correction which takes place during treatment itself.