Collaborative RTOG and ACRIN Trial is Launched to Evaluate Adaptive Radiotherapy with FDG-PET/CT for Patients with Non-Small Cell Lung Cancer

The phase II joint RTOG 1106 / ACRIN 6697 trial activated on February 22, 2012 will evaluate whether information gained from an FDG-PET/CT scan during the course of radiotherapy (RT) can facilitate individualized adaptive therapy for patients with stage III, inoperable non-small cell lung cancer (NSCLC). The investigators hope to learn if adaptive RT improves local regional tumor control compared with standard RT treatment.

The trial’s primary treatment objective is to determine whether the radiation dose directed to a tumor can be escalated to improve the freedom from local-regional progression (LRPF) rate at 2 years by using FDG-PET/CT scans to individualize adaptive RT plans. The trial’s imaging aim is to evaluate if FDG-PET/CT can determine how well a participant’s cancer responds to treatment based on various imaging parameters (e.g., tumor intensity, tumor size). The research also addresses the effectiveness of imaging to predict where disease is present and where efforts at local control of the tumor need to be focused.

All participants will undergo a baseline FDG-PET/CT scan as part of their treatment planning. Participants in both arms will receive RT once a day 5 days a week for 6 weeks. After 4 weeks of treatment, participants of both arms will undergo a second FDG-PET/CT scan. Participants in the experimental arm will have the RT planning modified to provide as high a dose as possible to the residual active tumor while keeping doses to normal lung tissue constant (mean lung dose of 20 Gy) and doses to other adjacent organs within safe limits. Participants in the control arm will complete treatment as initially planned.

In a subset of participants, [F-18] fluoromisonidazole (FMISO)-PET/CT will be conducted at baseline to identify the presence of hypoxia (reduced oxygen levels), which inhibits the production of the oxygen-free radicals that enable radiation to damage DNA and kill tumor cells.

Participating sites will be both RTOG members and ACRIN-approved institutions. For more information, visit RTOG 1106 or ACRIN 6697.