Researcher identifies nearly 100 studies supporting use of thermal ablation to treat lung cancer

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The journal *Radiology* will publish in its September issue an article written by Damian E. Dupuy, M.D., director of tumor ablation at Rhode Island Hospital, supporting the use of ablation procedures for the treatment of lung cancer. The article, "Image-guided Thermal Ablation of Lung Malignancies," reviews the results of nearly 100 studies conducted between 1991 and 2011 that conclude that image-guided ablation for lung cancer is a successful alternative for patients who cannot withstand surgery due to advanced age or medical comorbidities.

Percutaneous image-guided tumor ablation, which has been applied to a variety of solid tumors, is a proven alternative to radiation therapy and surgery. It is being adopted by many in the radiology community, and has begun to take hold with physicians in the surgical, medical, and radiation oncology fields who are incorporating this new treatment in the care of their patients.

"Many of the lung cancer patients we see at Rhode Island Hospital are unable to have surgery, and may have trouble tolerating radiation therapy," Dupuy said. "Treating these patients with thermal ablation provides them with a safe, effective alternative. It also allows them to receive treatment on an outpatient basis, and enables them get back to their lives more quickly."

Image-guided ablation is proving to be an important tool in the treatment

of primary and secondary lung tumors. It offers clinicians and patients a repeatable, effective, low-cost, and safe treatment and, in some cases, cure of both primary and metastatic thoracic malignancies either before or concurrently with systemic therapy and radiation therapy.

Radiofrequency ablation is the current ablative method of choice, although other techniques, including microwave ablation, laser ablation, and cryoablation, are also available. Each of these image-guided thermal ablation procedures involves the use of needlelike applicators that are placed directly into tumors by using imaging guidance. Tumors are destroyed by the application of either intense heat or cold.

Dupuy reviewed the findings of lung ablation studies conducted between 1991 and 2011, including 16 in which he was an investigator. He served as the senior author on the majority of the studies, and as principal investigator on four: "Percutaneous radiofrequency ablation of malignancies in the lung," (2000); "Image-guided radiofrequency tumor ablation: challenges and opportunities -- part II," (2001); "Radiofrequency ablation followed by conventional radiotherapy for medically inoperable stage I non-small cell lung cancer," (2006); and "Radiofrequency and microwave tumor ablation in patients with implanted cardiac devices: Is it safe?" (2010).

Dupuy's review of the literature concludes that thermal ablation has achieved an overall survival rate of 48 to 80 percent at two years. Based on the numbers of published reports, and a 13 percent increase from 2007 to 2008 in the use of Medicare Current Procedural Terminology code for lung radio frequency ablation, image-guided ablation of thoracic malignancies is definitely increasing. It is clear that patients who have lung malignancies with limited treatment options are benefiting from image-guided ablation therapy, though the exact subset of patients who will benefit most and with what ablating technology remains unknown. Therefore, additional research must be conducted.

Dupuy also said that prospective comparisons of this technology with other treatment alternatives (i.e. stereotactic body radiation therapy alone or in combination in similar populations) are necessary if this field is to garner more widespread support and use in the oncology community.

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