What is SBRT, and which patients are good SBRT candidates?

SBRT stands for Stereotactic Body Radiation Therapy, a radiation therapy approach which delivers high dose radiation to a target within the body, in either a single treatment session or up to approximately five treatment sessions (each session is typically referred to as a “fraction”).

The first term in the acronym, “stereotactic” refers to precise three dimensional localization of a tumor target. The incorporation of the second term in the acronym, “body,” is of historical derivation. Stereotactic radiation therapy was first invented for the treatment of brain tumors with tools like the Gamma Knife – which has been in practice for a half century. Extension of stereotactic high-dose radiotherapy techniques to tumor targets outside of the brain and cranium is relatively novel, an advent of the past decade. Thus the use of the term “body” delineates that the technique is being applied to extracranial (non-brain) tumors.

We have had a few recent questions as to which patients are good candidates for SBRT for lung cancer. The applications of SBRT for lung cancer grew out of the fact that patients with early stage yet medically inoperable lung cancer had fairly poor outcomes with conventional radiation therapy. It is in these patients that SBRT trials have been conducted, and in these patients that great success has been shown.

For example, if a patient with an isolated lung cancer (T1, T2, N0) was not able to undergo surgery because of other medical conditions such as heart disease, historically success with conventional external beam radiation therapy was limited. With traditional techniques, the chance of locally controlling a cancer such as this was 50% at best. With SBRT, probability of locally controlling such a tumor now exceeds 90%... indeed a dramatic improvement.

SBRT can be used for patients with clinically early stage, solitary, non-small cell lung cancers, measuring as large as 5 to 7 cm. Size is not the only consideration – location of the primary tumor is important. Cancers that are largely adherent or close to the chest wall can lead to chest wall pain after therapy. Radiation oncologists also assess carefully when cancers may be too close to the central structures of the chest and the large airways for SBRT treatment – alternative dose and fractionation strategies may be employed to lessen the risk of obstruction of the large airways due to possible inflammation and scarring after treatment.

Is SBRT an option for patients that may otherwise be able to undergo surgery? That has yet to be established, although clinical trials with medically operable lung cancer are underway and results are pending.

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