

Stereotactic Ablative Radiotherapy (SABR) for Treatment of Primary Cancer and Metastases

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Abstract

Ablative dose range radiotherapy has been facilitated by technological innovations including stereotactic targeting, comfortable and reliable immobilization, motion assessment and control, advanced dosimetry, and image guidance. The dreaded “late effects” of historical large dose per fraction radiotherapy can be modulated to primarily occur within the tumor and immediate peri-tumoral zone. In many tumor locations, the collateral damage is tolerable. More than for many radiotherapy approaches, stereotactic ablative radiotherapy (SABR), also known as stereotactic body radiation therapy (SBRT), has been tested in valid clinical experiments to both characterize its effects and measure outcomes. The predominant clinical model has been early stage lung cancer in medically inoperable patients. Targeted tumor control rates have been dramatically improved with SABR compared to conventionally fractionated radiation as a result of improved tumor kill from hypofractionation. Toxicity has been mostly tolerable because of geometric avoidance of prescription-range dose to normal tissues afforded by technology. The clinical models are being extended to many other sites of primary cancer as well as metastases to a variety of organs. Clinical results and therapeutic shortcomings will be discussed as well as a future view for this category of therapy.

Objectives:

1. Explore the rationale and goals of applying ablative radiation delivery for patients with lung cancer and a variety of other primary and metastatic cancers
2. Understand variations in toxicity based on treatment experience
3. Be apprised of results of clinical trials using such stereotactic ablative radiation therapy.