STEREOTACTIC BODY RADIATION THERAPY: LESS IS MORE

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DISCLOSURES

• NONE
LEARNING OBJECTIVES

• Understand basic principles of stereotactic body radiation therapy (SBRT)
• To appreciate the indications and utilization of SBRT in cancer treatment
• Understand the clinical process and outcomes of SBRT in various disease sites
BASIC PRINCIPLES

• Delivery of high ablative doses of radiation treatment using highly precise treatment fields
• Complete cancer kill within the treated volume while minimizing dose to normal tissue
BASIC PRINCIPLES

STANDARD RADIATION FRACTION SIZE
(1.8-2.0 Gray per treatment for 25-45 treatments)

SBRT FRACTION SIZE
(5-24 Gray per treatment in 1-5 treatments)
BASIC PRINCIPLES

• Requires
  • Sophisticated focused treatment planning/delivery with sharp radiation dose distribution
  • Reliable, reproducible, and rigid patient positioning
  • Mechanisms to account for tumor and normal tissue movement
  • High level of QUALITY ASSURANCE
BENEFITS

• Convenience
  - Shorter treatment course (1-2 wks vs >6-7 wks)

• Cost-Effective

• Outstanding clinical outcomes
  - High rates of cure with minimal side effects
WHO ARE CANDIDATES

• Patients with:
  • Primary early stage lung cancers or tumors that have spread to the lung
  • Liver tumors or tumors that have spread to the liver
  • Pancreatic tumors
  • Tumors that have spread to bone, adrenal gland, or other limited sites (oligometastases)
  • Prostate Cancer
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LUNG SBRT PLANNING PROCESS

CT SIMULATION
- PATIENT IMMOBILIZATION
- ASSESS TUMOR MOTION
LUNG SBRT PLANNING PROCESS

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LUNG SBRT PLANNING PROCESS
• >90% local tumor control

• Comparable to surgical resection
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PROSTATE CANCER SBRT

• Shortens treatment from 44-45 fractions to 5 fractions!
• Significantly more cost-effective
PROSTATE CANCER SBRT
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PROSTATE
PROSTATE CANCER SBRT
PROSTATE CANCER SBRT

SPACER

PROSTATE

RECTUM
PROSTATE CANCER SBRT

Spacer between Prostate and Rectum

- Biocompatible liquid gel injected between the prostate and rectum under ultrasound guidance

Alongi et al. Radiation Oncology 2013, 8:171
PROSTATE CANCER SBRT

FIDUCIAL
PROSTATE CANCER SBRT
ASTRO 2016: SBRT Offers Patients With Prostate Cancer High Disease Control and Low Toxicity in Fewer Treatments

By The ASCO Post
Last Updated: 9/29/2016 11:28:26 AM

Key Points

- At 5 years following SBRT, 97% of patients were free from prostate cancer progression.
- Specifically, in the low-risk group, the 5-year relapse-free survival rate was 97.3%, which is superior to the 93% historical comparison disease-free survival control rate.
- Fewer than 2% of all patients experienced serious side effects in the 5 years following SBRT.

High-dose stereotactic body radiotherapy (SBRT) for men newly-diagnosed with low- or intermediate-risk prostate cancer results in shorter treatment times, low severe toxicity, and excellent cancer control rates, according to research presented by Meier et al at the 58th Annual Meeting of the American Society for Radiation Oncology (ASTRO). The study is the first large, multi-institutional study of SBRT in prostate cancer with long-term follow-up.

Although prostate tumors generally respond well to radiation therapy, the possibility of radiation exposure to healthy tissue in the genitourinary and gastrointestinal systems can be of concern. SBRT is an advanced technique...
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SBRT TAKE HOME POINTS

• Highly sophisticated and effective form of cancer treatment
• Convenient and cost-effective
• Utilized in several different types of cancers
THANK YOU