

Stereotactic Body Radiation Therapy: Cancer Treatment

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Description

In the ever-evolving landscape of cancer treatment, Stereotactic Body Radiation Therapy (SBRT) stands out as a remarkable advancement. This technique delivers highly precise doses of radiation to tumors while minimizing exposure to surrounding healthy tissue. Here's an in-depth look at SBRT, its principles, applications, benefits and future prospects in oncology. Stereotactic body radiation therapy, often referred to simply as SBRT, is a non-invasive treatment modality that uses advanced imaging techniques to precisely target and deliver radiation to tumors. Unlike traditional radiation therapy that may span several weeks with daily treatments, SBRT delivers high doses of radiation in a limited number of sessions, often completed within a week or less. Precision targeting SBRT relies on advanced imaging technologies such as Computed Tomography (CT) scans, Magnetic Resonance Imaging (MRI), and sometimes Positron Emission Tomography (PET) scans to precisely locate the tumor in three-dimensional space. This accuracy allows oncologists to deliver radiation with sub-millimeter precision. High dose per fraction. SBRT delivers large doses of radiation in fewer fractions compared to conventional radiation therapy. This is possible due to the ability to precisely localize the tumor, minimizing the risk to nearby healthy tissues. Since breathing or other involuntary movements can affect tumor position, SBRT often integrates techniques like gating or tracking to enhance precision. SBRT has gained prominence in the treatment of various types of cancers early-stage lung cancer. SBRT offers a non-surgical option for patients who are unable to undergo surgery or prefer a less invasive treatment. SBRT can be used to treat small tumors in the liver, offering an alternative to surgery or as a bridge to liver transplantation.

Spinal tumors

Precise targeting of spinal tumors with SBRT can provide pain relief and tumor control without the need for invasive surgery. SBRT is increasingly used for localized prostate cancer, offering a shorter treatment duration compared to conventional radiation therapy. SBRT typically requires fewer treatment sessions, often completing treatment in 1 to 5 sessions, compared to several weeks with conventional radiation therapy. By precisely targeting tumors, SBRT reduces radiation exposure to surrounding healthy tissues and organs, minimizing side effects. Shorter treatment

durations and fewer visits to the clinic enhance patient convenience and comfort. The future of SBRT looks promising with ongoing research and technological advancements. Key areas of development include investigating SBRT in combination with other treatments like immunotherapy to enhance treatment outcomes. Integrating real-time imaging and treatment adjustments to account for changes in tumor size and location during treatment. Exploring new applications of SBRT in treating different types of cancer and recurrent tumors. Stereotactic Body Radiation Therapy represents a significant advancement in cancer treatment, offering precise targeting, reduced treatment times and improved outcomes for patients. As technology continues to evolve and research progresses, SBRT holds the promise of further enhancing the efficacy and accessibility of cancer care worldwide.

Prostate cancer

Prostate cancer is one of the most common cancers among men, particularly affecting those over the age of 50. With advancements in early detection and treatment, the prognosis for prostate cancer patients has significantly improved over the years. This article delves into the nature of prostate cancer, its risk factors, symptoms, diagnostic methods, treatment options, and preventive measures. Prostate cancer originates in the prostate gland, a small walnut-shaped gland located below the bladder and in front of the rectum. The prostate produces seminal fluid, which nourishes and transports sperm. Prostate cancer typically grows slowly and may initially remain confined to the prostate gland, where it may not cause serious harm. However, some types of prostate cancer are aggressive and can spread quickly. Several factors can increase the risk of developing prostate cancer the risk increases significantly after age 50. A family history of prostate cancer increases the risk. African American men have a higher risk of developing and dying from prostate cancer. Certain inherited gene mutations can increase the risk. Diets high in red meat and high-fat dairy products and low in fruits and vegetables may increase the risk. In the early stages, prostate cancer may cause no symptoms. As it progresses, symptoms may include difficulty urinating, decreased force in the stream of urine, blood in the urine or semen, erectile dysfunction, discomfort in the pelvic area, bone pain.