Single-session stereotactic radiosurgery

Single-session stereotactic radiosurgery (SRS) is a specialized form of radiation therapy that delivers a high dose of radiation to a precise target in the body in a single treatment session. It is often used to treat tumors in the brain, spine, and other parts of the body.

During single-session SRS, a team of healthcare professionals use imaging techniques, such as MRI or CT scans, to precisely locate the tumor and develop a treatment plan. They then use highly focused radiation beams to deliver a high dose of radiation to the tumor while minimizing exposure to surrounding healthy tissue.

One of the primary advantages of single-session SRS is that it can be completed in a single day, allowing patients to return to their normal activities quickly. Additionally, it can be an effective alternative to traditional radiation therapy, which typically requires multiple treatment sessions over a period of several weeks.

Single-session SRS is often used to treat small tumors, as the high dose of radiation can be more effective at destroying cancerous cells in a smaller area. It is also frequently used to treat tumors in locations that are difficult to reach with traditional surgery or radiation therapy.

As with any medical procedure, there are potential risks and side effects associated with singlesession SRS. These may include fatigue, headaches, nausea, and skin irritation. More serious side effects, such as brain swelling, radiation necrosis, and cognitive deficits, are rare but can occur. Patients undergoing single-session SRS should be closely monitored by their medical team to ensure proper management of any potential side effects.

In summary, single-session SRS is a specialized form of radiation therapy that delivers a high dose of radiation to a precise target in the body in a single treatment session. It can be an effective alternative to traditional radiation therapy for some patients with small tumors or tumors in hard-to-reach locations. However, patients should be aware of the potential risks and side effects associated with this procedure and discuss them with their medical team before undergoing treatment.

Single-session stereotactic radiosurgery (SRS) is a proven and effective treatment modality for various benign, malignant, and functional intra-cranial pathologies. In certain situations, single-fraction SRS is limited because of lesion size and location. Hypofractionated gamma knife radiosurgery (hfGKRS) is an alternative approach for such unconventional indications.

Single-fraction stereotactic radiosurgery (SRS) is a specialized form of radiation therapy used to treat certain brain and spinal cord conditions. Unlike conventional radiation therapy, which is typically administered over multiple sessions, SRS delivers a high dose of radiation to the target area in a single session. This precise and focused treatment aims to maximize the radiation dose to the target while minimizing exposure to surrounding healthy tissues.

The key features of single-fraction stereotactic radiosurgery are:

Single Session: As the name suggests, the treatment is completed in a single session, usually lasting

a few hours.

High Precision: SRS utilizes advanced imaging techniques such as MRI, CT scans, and specialized stereotactic equipment to pinpoint the exact location of the target lesion. The high level of precision ensures that the radiation is accurately delivered to the intended area.

High Dose: SRS delivers a high and concentrated dose of radiation to the target lesion, which is designed to be sufficient to control or destroy the abnormal tissue.

Treatment Planning: Before the actual treatment, a team of specialists, including radiation oncologists, neurosurgeons, and medical physicists, collaborates to create a personalized treatment plan. They carefully define the target area and determine the optimal dose and angles for radiation delivery.

Non-invasive: SRS is a non-invasive procedure, meaning it does not require any surgical incisions. Patients usually wear a head frame or mask to help immobilize the head or body during treatment.

Various Applications: Single-fraction SRS is commonly used to treat brain tumors (both benign and malignant), arteriovenous malformations (AVMs), trigeminal neuralgia, and certain metastatic lesions in the brain or spine.

Side Effects: While single-fraction SRS is generally well-tolerated, some patients may experience mild side effects such as fatigue, headaches, or temporary hair loss. Serious complications are relatively rare but may include radiation necrosis (damage to healthy brain tissue) or edema (swelling).

It's important to note that not all patients or conditions are suitable for single-fraction SRS. Some cases may require multiple fractions of radiation or a combination of SRS with other treatment modalities, such as surgery or fractionated radiation therapy.

As with any medical procedure, the decision to use single-fraction SRS depends on the patient's specific condition, overall health, and the recommendation of the treating medical team. Each case is unique, and treatment plans should be tailored accordingly to achieve the best possible outcomes while minimizing potential risks

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