Letter: COVID-19 Pandemic: Safety Precautions for Stereotactic Radiosurgery

To the Editor:

At this time, there are no best practice recommendations regarding stereotactic radiosurgery (SRS) in the setting of COVID-19. This response aims at providing a brief overview of recommendations on proceeding with SRS amidst an unprecedented viral pandemic.

SRS is frequently utilized in the management of intracranial malignancies, benign tumors, vascular malformations, and neuropathic pain. Truly urgent/emergent intracranial pathology is rare with SRS; thus, patient-specific consideration for SRS should be given for patients harboring malignant secondary or primary neoplasms in a semiurgent fashion (Table). Factors that drive the decision to proceed with SRS will include clinical and radiographic tumor characteristics, patient prognosis, and whether alternative therapies, such as chemotherapy or immunotherapy, may be pursued in lieu of SRS.

In many instances, SRS represents an ideal noninvasive treatment modality in the current pandemic setting as it is performed as an outpatient procedure with minimal personal protective equipment (PPE), typically requiring only 1 session. Therefore, when compared to standard fractionated radiotherapy, which requires between 10 and 30 hospital visits, SRS stands out as an ideal alternative. When compared to surgery, SRS does not require endotracheal intubation or the use of high-speed instruments, lowering the risk of exposure to infectious aerosols and bone dust present in open procedures.[1,2] Hence, SRS may be considered as a safe treatment option and potentially cost-effective measure during this outbreak.

While locoregional practices for SRS vary significantly, several basic measures may be implemented. Patients should be screened via telephone 1 d prior to their appointment to determine current health status, risk of active infection, and exposure likelihood. Patients who screen positive via a standardized questionnaire[3] should be subjected to a 14-d quarantine and COVID-19 testing (if available). If testing is unavailable, these patients should be treated as COVID-19 positive with PPE utilization and minimized clinical staffing.

On the day of SRS, the patient and their driver enter an external vestibule for assessment. Both individuals are screened prior to entry, including infrared temperatures. Procedural bay preparations, 6-foot social distancing measures, PPE handling, patient flow guidance, and patient transportation should follow guidelines as outlined by the Centers for Disease Control and Prevention (CDC).[4] Each patient is assigned to 1 nurse throughout the procedure. After arrival and confirmed negative screening, patients change into a hospital gown and thoroughly wash their hands with soap and water. All personal belongings are placed in a hospital bag and stored in a locker away from the treatment area. When placing the SRS head frame, appropriate PPE should be worn by involved providers. We define "appropriate PPE" as the use of standard-of-care, procedure-specific PPE for patients who are confirmed COVID-19 negative: surgical mask and gloves. "Enhanced PPE" for COVID-19 suspected or positive patients is defined as either an N95 respirator plus face shield or powered air-purifying respirator (PAPR), surgical cap, disposable gown, and gloves. Nasal cannula with capnography should be avoided due to potential viral particle aerosolization. Peripheral pulse oximetry should be placed in lieu of nasal cannula to assess oxygenation status and the need for supplemental

TABLE. Classification of SRS Indications

Category	Definition	Clinical condition
Elective	May be delayed indefinitely with minimal risk of adverse consequences or treats conditions that can be managed medically	• Arteriovenous malformation • Trigeminal neuralgia • Functional indications (ie, thalamotomy)
Semielective	Should be performed within 3 to 6 mo to avoid adverse consequences	• Glomus tumor • Meningioma • Pituitary adenoma • Schwannoma
Semiurgent	Should be performed as soon as possible, but may be delayed over 48 h	• Brain metastases • Primary intracranial malignancy • Rapidly enlarging lesions • Compression of critical structures (ie, brainstem, optic apparatus, etc)
Urgent/emergent	Requires acute or subacute surgical intervention in less than 24 to 48 h	• N/A

oxygen. Due to the physical separation of radiology and SRS procedural suites, patients travel on stretchers wearing a facemask to obtain radiographic imaging. In the radiology department, patients are again asked to use hand sanitizer before entering/leaving the scanner room. After the completion of radiographic imaging, patients are then returned to the procedure bay. When SRS plans are complete, patients wash their hands again with soap and water located outside of the treatment vault. SRS is then performed per the standard institutional protocol. Once SRS is complete, the headframe is removed, and Bacitracin ointment is placed on pin sites followed by small round bandages. The patient redresses, collects personal belongings, and a copy of discharge instructions is reviewed in detail. Discharge instructions should include COVID-19 specific signs and symptoms as well as contact information should concerns arise. All patients receive a follow-up telephone call the day after their procedure to assess their well-being.

In summary, considering the rapidly expanding COVID-19 pandemic, there continues to be a need for SRS, particularly in patients with conditions requiring semiurgent care. SRS is a noninvasive treatment modality that minimizes hospital resources and reduces infectious spread when compared to open procedures or conventional radiotherapy. This response serves as a guideline for providers and policymakers to implement SRS during this unprecedented healthcare crisis.

Disclosures

The authors have no personal, financial, or institutional interest in any of the drugs, materials, or devices described in this article.

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