Interventional Oncology: Maintaining Essential Practice During the COVID-19 Pandemic

Considerations and risk mitigation strategies for interventional oncology practice in the COVID-19 era.

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The global challenge of clinical decision-making during the COVID-19 pandemic centers around the staggering limitations of our knowledge about this novel disease. COVID-19, or SARS-CoV-2, was first identified slightly more than 6 months ago. The data that have been gathered, analyzed, described, and published in that very short time can provide some insights to guide practice, but they are understandably limited in quantity as well as context. At best, most guidelines offered in this desert of data will constitute educated guesses crafted from a combination of best available evidence, common sense, personal observation, and anecdotal lore.

Amid this global pandemic, patients continue to need care for non–COVID-19 illnesses. Patients with cancer are among the most vulnerable to the impacts of delays in care and also have an increased susceptibility to infection. Devising a plan to safely provide care to oncology patients is a critical aspect of pandemic response. Our interventional radiology department in a busy public hospital in New York City, one of the first epicenters of the pandemic in the United States, continued to provide essential interventional oncology (IO) procedures through the city's outbreak peak and into our postpeak plateau phase, while continually developing and adapting strategies based on emerging evidence and accumulated experience.

RISK ASSESSMENT: CANCER VERSUS COVID-19

Risk-benefit assessment is crucial to determine the timing of oncology procedures during the COVID-19 pandemic. Although bringing a patient to a hospital, outpatient center, or other procedural setting may increase their risk of exposure to COVID-19, this potential risk must be weighed against the known risk of delaying diagnosis or treatment of cancer. For this reason, IO procedures, including image-guided biopsy, port placement, chemoembolization, yttrium-90 (Y-90) radioembolization, and ablation, are time-sensitive and have been continued at most institutions nationwide even when elective procedures have been suspended.

Consideration may be given to deferring less time-sensitive procedures during a period of very high regional or institutional COVID-19 rates to decrease patient risk and conserve resources, including personal protective equipment and staff time. During the peak of the spring 2020 outbreak in New York City, our department elected to defer oncology procedures for which the risk of delayed care was deemed to be less than the risk of exposure to COVID-19, such as thyroid nodule biopsy, embolization for indolent neuroendocrine tumor metastases, and ablation of slow-growing renal masses. These procedures were rescheduled promptly after COVID-19 rates decreased a few weeks later. Institutions may also elect to continue these types of procedures because the duration of any local outbreak is uncertain.

Assessment of risk must be extended to include the psychoemotional impact of changes to care. Clear and frequent communication with patients is imperative in this uncertain period. For today's oncology patients, fears related to the COVID-19 pandemic can compound the anxiety and dread of a cancer diagnosis. Speaking directly with patients allows physicians to not only convey a procedure plan but also express empathy, address concerns, and assure them that the principal focus is always their health and safety. The impact of despair should not be underestimated in patients who know or fear they may have cancer. During the spring 2020 peak in COVID-19 infections in New York City, many patients whose oncology care was delayed due to the pandemic expressed a sense of abandonment and despondency, which in extreme cases even culminated in attempted suicide.[1] A personal discussion with the treating interventional oncologist can help reassure understandably concerned patients that careful consideration is guiding their care, whether the decision has been made to delay a procedure or proceed as scheduled.

PERIPROCEDURAL RISK MANAGEMENT

At this time, all patients presenting for outpatient procedures in our hospital system are required to undergo COVID-19 polymerase chain reaction (PCR) testing via nasopharyngeal swab before the procedure. The test should be performed as close to the procedure date as possible, taking into account the pragmatics of test turnaround time; currently, the recommendation is to test within 5 days of the procedure. Patients are instructed to strictly socially distance between the time of the test and the procedure to minimize the likelihood of new infection after the test. A nurse calls each patient 24 to 48 hours before the procedure to ask whether new symptoms have developed as well as to confirm preprocedural instructions.

The periprocedural areas, including registration, preparation, and recovery rooms, are therefore considered to be COVID-19–free zones, and visitors are not permitted in these areas. Patients and staff are required to wear masks at all times. Minimizing the risk of exposure to COVID-19 in perioperative areas is important for all patients and critical for oncology patients, who may have compromised immune function. Procedures are scheduled to minimize the number of patients in the waiting area, and seats are clearly marked to indicate where patients may sit to ensure adequate distancing. Patients are brought out of the periprocedural area to meet the person who will escort them home after their procedure.

If resources permit, designating a fluoroscopy suite and CT scanner for COVID-19–positive patients or patients under investigation and separating outpatient from inpatient procedure areas are potential strategies for risk mitigation. When resources do not permit dedicated areas, infection control should be consulted to develop a sanitization process for each room used for infected patients/those under investigation, which may include use of a HEPA filter in addition to cleaning of all surfaces.

Most of our clinic visits, including initial consultations and follow-up appointments, have been transitioned to video visits or televisits to minimize potential patient exposure to infection, unless there is a specific indication for physical examination.

MANAGING COVID-19–POSITIVE PATIENTS

A patient with a positive preoperative COVID-19 PCR test can present a particular challenge. If the patient has symptoms of viral illness, whether the classic respiratory and constitutional presentation or other symptoms (eg, gastrointestinal), most IO procedures should be deferred for the safety of the patient. Our hospital system's guidelines recommend waiting until at least 72 hours after resolution of symptoms and 14 days after initial symptoms or 14 days after a positive test if the patient has no symptoms.

Rare cases of highly time-sensitive procedures may arise that warrant exceptions to these guidelines, such as biopsy or treatment of rapidly growing tumors. In these cases, precautions should be taken as if the patient has active and transmissible COVID-19 infection regardless of symptomatology.

It remains controversial whether patients who tested positive for COVID-19 should be retested prior to a procedure. PCR positivity may continue for weeks to months after initial infection, although most experts agree that it is highly unlikely that the patient continues to be infectious throughout this period. Waiting until the PCR test is negative could result in a prolonged delay in care. In one small study, no live virus could be isolated from patients after day 8 of infection, and antibodies were developed in all patients by day 14.[2] These findings support time-based criteria in deciding when to proceed with a procedure, given concerns over accuracy of antibody testing; however, protocols should be adjusted as additional evidence emerges.

Regardless of the criteria used to determine eligibility for procedures, patients who have had recent COVID-19 infection should be managed very carefully. Many infected patients may not return to their usual state of health for at least a few weeks after initial illness, according to a Centers for Disease Control and Prevention survey,[3] possibly longer based on extensive anecdotal reports. Patients who have had severe illness requiring hospitalization may additionally have prolonged renal and hepatic dysfunction, which should be taken into account in planning procedures. Specific areas of concern in outpatients undergoing IO procedures after COVID-19 infection include cardiopulmonary changes, generalized fatigue, and hypercoagulability.

Cardiac and pulmonary sequela of COVID-19 infection have been demonstrated clinically and on follow-up imaging and may affect patients' response to moderate sedation medications. Extreme caution should be used in administering procedural sedation to patients after infection. In our department, we have chosen a conservative approach. Anesthesiology provides sedation for patients with recent infection to ensure patient safety because we have observed that some of these patients demonstrate more lability in vital signs and may be at higher risk for sedation-related respiratory failure. It is unknown whether patients who have had asymptomatic infection are also at increased risk.

Many patients also report prolonged malaise and fatigue after COVID-19 infection. Performance status should be reassessed prior to treatment, as it may impact the patient's ability to tolerate postprocedural effects such as postembolization syndrome after bland embolization or chemoembolization or fatigue after Y-90 radioembolization.

Marked hypercoagulability has been widely described in patients with COVID-19 infection. Anticoagulation has been incorporated into the treatment regimen for patients hospitalized with COVID-19 at many institutions. Extreme elevation of D-dimer levels has been reported as a poor prognostic indicator in hospitalized patients[4] but can also occur in patients who are not severely ill. Both arterial and venous thrombotic events have been seen as an initial presenting symptom in otherwise asymptomatic patients. COVID-19–related hypercoagulability could increase the rate of postprocedural thrombotic complications, particularly if superimposed on an underlying paraneoplastic hypercoagulability, and should be taken into consideration prior to performing IO procedures such as therapeutic embolization and thermal ablation. It is unclear whether routinely including a D-dimer level in laboratory tests sent prior to these procedures is warranted in patients with a recent positive COVID-19 test based on the limited data available.

CONCLUSION

IO practitioners have had to adapt to meet the challenges of the COVID-19 pandemic, and risk mitigation strategies will continue to evolve as new data emerge. By implementing focused policies, including rigorous testing, protected periprocedural areas, and special considerations for patients after COVID-19 infection, interventional radiologists can continue to provide safe and expeditious cancer care through this unprecedented time. ■

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