COVID-19 Rapid Communication

Spanish risk management framework across 17 radiation oncology centers during COVID-19 pandemic

Vladimir Suárez-Gironzini a, Elena Moreno-Olmedo a, María Pérez b, José A. González c, Daniel Rivas d, Juan P. Fusco e, Penny Kechagioglou f, Escarlata Lopez a,⇑

a Department of Radiation Oncology, La Milagrosa Hospital; b Department of Risk and Safety, GenesisCare, Madrid; c Department of Radiation Oncology, GenesisCare, Seville; d Department of Radiation Oncology, GenesisCare, Málaga; e Department of Medical Oncology, La Milagrosa Hospital, GenesisCare, Madrid, Spain; f Department of Clinical Oncology, GenesisCare, Windsor, United Kingdom

Article info

Article history:
Received 5 May 2020
Received in revised form 20 May 2020
Accepted 22 May 2020
Available online 29 May 2020

Keywords:
COVID-19
SARS-CoV-2
Radiotherapy
MDT
Safety

The COVID-19 pandemic has impacted our healthcare systems and the rapid introduction of new protocols that have been required to keep patients and workforce safe. In order to maintain activity with radiotherapy clinical assistance, we have implemented different measures in our centers from a patient and staff safety perspective.

The current SARS-CoV-2 pandemic situation has significantly affected the normal activity of healthcare systems. Measures for controlling the spread of the virus include keeping patients and workforce safety procedures in radiotherapy (RT) centers where there generally a close contact during treatment delivery [1–4] (Table 1).

Patients with cancer are particularly fragile in this COVID-19 crisis. On the one hand, their survival will depend most frequently on tumor aggressiveness and appropriate treatment for it; on the other hand, continuous visits to the hospital will expose them to an increased risk of becoming infected [5], so they are “swimming against the tide” and are in real need for medical advice and special care [6]. Radiation treatment is part of the integral cancer treatment and about 50% of all patients who are diagnosed with cancer require radiotherapy at some point in their treatment [7]. Our experience during the crisis has focused on four different aspects: patient and staff safety, implementation of alternative radiotherapy schedules, psychological approaches, and establishment of a COVID-19 multidisciplinary team (MDT).

Since the beginning of the outbreak, Spain could not do massive testing due to the lack of Polymerase-Chain-Reaction (PCR) tests. Therefore, COVID-19 MDT was created to handle positive or suspected positive patients and workforce, individualizing case assessment and collecting all the incident report form. Hypofractionated-based schemes minimize the time that the patient stays at the center [8]. Furthermore, RT can be used as a temporal bridge to avoid chemotherapy immunosuppression. Psychological care may help patients to overcome the fear of infection and keep patients on treatment [6].

From our point of view, the workforce could also be extremely impacted. Our psycho-oncology team and an external online coaching assistance has been implemented to support our patients and staff. Procedures were implemented even before the state of alarm in Spain was declared on the 13th of March, when the incidence of COVID-19 began to rise in our country.

https://doi.org/10.1016/j.radonc.2020.05.041
0167-8140/© 2020 Elsevier B.V. All rights reserved.
Challenges with COVID-19 and potential solutions. Personal Protective Equipment (PPE); Multidisciplinary Team (MDT); Polymerase-Chain-Reaction (PCR).

| Challenge | Solution |
|-----------|----------|
| 1. Have healthy workers to continue the unit running | - Back-up teams: |
| 2. Avoid the spread of the virus | - Quarantine workers with symptoms since early symptoms were detected |
| 3. To have patients coming to clinic as less as possible | - PCR testing for workers with symptoms |
| 4. Treat patients already infected by COVID-19 | - Implementation of clean circuits |
| 5. Joint decision making about infected staff or patients | - Safety measures; PPE, disinfection, timing |
| 6. MDT decisions | - Establishment of MDTs to determine exposure risks and procedures |

Patient safety perspective

Standard protective measures have been implemented across all national units; staff are being instructed to use face masks, hand washing with soap, and hydroalcoholic solutions, also, to avoid close contact with patients and maintain appropriated distances. Daily cleaning and disinfection of the areas is reinforced. Moreover, patients are instructed to call in case of suspicious symptoms and they pass through a robust triage process when arriving to clinic in order to rule out fever or respiratory problems. These steps maintain a clean circuit for patients in avoiding the risk of viral spread.

A patient’s treatment priority needs to be established on a patient-by-patient basis according to different factors; tumor type and staging, intention-to-treat, general patient status and potential RT schedule approach. Tumor categorization protocols have been established to determine priority for RT delivery. Five categories have been determined, mainly based on tumor histology: rapid access (<14 h or in the same day), A category (<5 days), B (>5 and <10 days), C (<4–6 weeks), D (>6 weeks). With this, patients with high priority, i.e. lung cancer, will start treatment in a period no longer than 5 days, while lower-priority patients may have their treatment delayed for more than 6 weeks or even wait for the pandemic to resolve in particular cases.

Based on tumor categorization, treatment decision for patients with suspicious or confirmed SARS-CoV-2 infection was made by a virtual COVID-19 MDT. The Board made an evaluation about each patient’s clinical condition, estimating the risk versus the benefit of viral spread. A patient’s treatment priority needs to be established on a patient-by-patient basis according to different factors; tumor type and staging, intention-to-treat, general patient status and potential RT schedule approach. Tumor categorization protocols have been established to determine priority for RT delivery. Five categories have been determined, mainly based on tumor histology: rapid access (<14 h or in the same day), A category (<5 days), B (>5 and <10 days), C (<4–6 weeks), D (>6 weeks). With this, patients with high priority, i.e. lung cancer, will start treatment in a period no longer than 5 days, while lower-priority patients may have their treatment delayed for more than 6 weeks or even wait for the pandemic to resolve in particular cases.

COVID-19 impact in our radiotherapy units

Safety measures have been implemented from the 2nd of March across the 17 national centers, six of them located within different hospitals, and across 224 staff members, including physicians, nurses, physicists, radiotherapists and administrative personnel. Among the staff, only 18 (8%) developed a confirmed or suspicious COVID-19 infection and had to quarantine. Diagnosis was confirmed in seven members by PCR.

Since the implementation of COVID-19 MDT back on March 7th, 36 suspected cases were discussed and 21 out of those 36 were diagnosed with COVID-19 by the PCR test. In addition, 7 out of the 21 corresponded to workers and the 14 remaining were patients under treatment. Unfortunately, 15 out of the initial 36 suspected cases could not be tested due to the lack of available tests in Spain, 11 were staff members and four were patients. These cases were directly isolated in quarantine due to high clinical suspicion.

Out of the 1208 patients treated during this period, 18 patients were suspected of SARS-CoV-2 infection and 14 of them were confirmed by the PCR tests. Four had symptoms suggesting infection, those were considered to be potentially infected from the safety point of view and could have their RT treatment normally following our COVID-19 protocols. 11 out of 14 patients (78%) with confirmation of infection were able to finish RT. However, three patients had to discontinue RT and were admitted to the hospital with worsening condition of the COVID-19 infection confirmed with positive PCR. One patient out of the three died due to infection-related complications.
Despite the limitations in time and number of infected cases, our findings suggest that evaluation case-by-case and accepted norms of cancer care delivery have been transformed out of necessity.

To sum up, the rapid implementation of these safety measures in our units has allowed us to continue treating cancer patients successfully. Introduction of priority staging systems, patient-by-patient case discussion and staff safety measures are mandatory. With a fast evolving landscape, where governmental indications may vary from day-to-day, management operations have also been implemented consistently: by the implementation of MDTs, with expertise not only in the Radiation Oncology field, but also from the legal, epidemiological, human resources, and economical perspective to improve workflow models and make decisions to protect both healthcare providers and patients. Priority stage systems, patient-by-patient case discussion and centers providing clean circuits are mandatory in this situation. However, isolation will end soon in our country and we expect a rebound of patients during the following months to come, due to delayed diagnosis. Therefore, we are anticipating strategies to set our departments up for this short-term future, in terms of avoiding collapse and growing waiting lists.

Conflict of interest

None to disclose.

CRediT authorship contribution statement

Vladimir Suárez: Formal analysis, Investigation, Writing - review & editing. Elena Moreno-Olmedo: Formal analysis, Investigation, Supervision, Writing - review & editing. María Pérez: Investigation. José A. González: Investigation. Daniel Rivas: Investigation. Juan Fusco: Investigation. Penny Kechagioglou: Writing - review & editing. Escarlata Lopez: Investigation, Supervision, Writing - review & editing.

References

[1] You B, Ravaud A, Canivet A, et al. The official French guidelines to protect patients with cancer against SARS-CoV-2 infection. Lancet Oncol 2020, Published Online March 25, 2020. DOI: 10.1016/S1470-2045(20)30204-7.
[2] Combs SE, Belka C, Niyaz M, et al. First statement on preparation for the COVID-19 pandemic in large German Speaking University-based radiation oncology departments. Radiat Oncol 2020;15:74. https://doi.org/10.1186/s13014-020-01577-1.
[3] Meattini C, Franco P, Belgioia L, et al. Radiation therapy during the coronavirus disease 2019 (COVID-19) pandemic in Italy: a view of the nation’s young oncologists. ESMO Open 2020;5:.https://doi.org/10.1136/esmoopen-2020-000779.
[4] Schrag D, Hershman DL, Basch E. Oncology practice during the COVID-19 pandemic. JAMA, Published online April 13, 2020, doi:10.1001/jama.2020.6236.
[5] Cancer guidelines during the COVID-19 pandemic. Lancet Oncol Published Online April 2, 2020 https://doi.org/10.1016/S1470-2045(20)30217-5.
[6] Fabiana G, Caliandro M, Surgo A, et al. Cancer patients in covid-19 era: Swimming against the tide. Radiother Oncol 2020;149:109–10. https://doi.org/10.1016/j.radonc.2020.04.002.
[7] Liang W, Guan W, Chen R et al. cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. Lancet Oncol 2020; published online Feb 14. DOI: 10.1016/S1470-2045(20)30096-6.
[8] Simcock R, Vengaloor Thomas T, Estes C, et al. COVID-19: global radiation oncology’s targeted response for pandemic preparedness. Clin Trans Radiat Oncol 2020;22:55–6.
[9] Accessed online the 2nd of May 2020: https://coem.org.es/media/news/pdf/Protocolo_Personal_sanitario_COVID-19.pdf.
[10] Morgan O. How decision makers can use quantitative approaches to guide outbreak responses. Philos Trans R Soc B Biol Sci. 2019.