

Advances in Radiation Oncology

How to reorganize the access of children in a radiotherapy department in the era of COVID19, in order to protect themselves and elderly patients

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| Abstract: | In most hospitals worldwide the radiotherapy department is shared by pediatric, adult and elderly patients. In our Cancer Institute in North East of Italy, we have applied several measures to avoid the transmission of COVID-19 from asymptomatic or mild-symptomatic patients, i.e. pediatric patients, to ones with an increased death risk, i.e. the elderly. As of today, none of patients in treatment at our Department have developed signs or symptoms of COVID-19 infection. |

Letter from Italy:

How to reorganize the access of children in a radiotherapy department in the era of COVID19, in order to protect themselves and elderly patients

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According to Liang¹, as of Jan 31, 2020, based on a cohort of patients in China, 1% of coronavirus disease (COVID-19) cases had a history of cancer. Although direct evidence is lacking to support changing or withholding anticancer therapy in cancer patients^{2,3}, the report showed that they had poorer outcomes from COVID-19, especially older patients¹. Most co-morbidities have been observed in COVID-19 positive deceased patients: in Italy, only 2,1% of deaths had no co-morbidities, instead 16,5% had a history of active cancer in the past 5 years⁴. Consequently, more attention is needed in patients with cancer in case of rapid clinical deterioration or symptoms suggestive of infection^{1,5}.

From Jan to Feb 8-2020, 2143 COVID-19 pediatric patients were reported in China: 4% were asymptomatic and in a high proportion of patients, symptoms were generally milder compared to adults⁶. The median incubation period of this virus is 5.2 days⁷, although some suggest up to 14. It is unclear when transmission begins, but the asymptomatic phase may play an important role. No data are available for children with cancer during chemotherapy, although three positive pediatric cases with solid tumors (2 hepatoblastomas, 1 rhabdoid tumor) recruited in Bergamo Pediatric Oncology Unit, Italy's hardest-hit city, have overcome post-chemotherapy neutropenia without additional problems given by COVID-19 (M. Provenzi, personal communication, 24 March 2020).

During a pandemic, radiotherapy centers remain among the few departments treating both adults and children. Practical recommendations have been recently proposed by colleagues of the “Red Zone”, an area between Milan and Venice in Northern Italy, to continue the radiotherapy while protecting patients, families, and health professionals from the infection⁸. Hypofractionation, as suggested for adult patients to mitigate the duration of treatment in these exceptional times⁹, is not sufficiently validated in most pediatric tumors.

On March 31, at 5:00 p.m., the Italian Minister of Health reported 105,792 cases of COVID-19 infection in Italy, with a median age of 62 years, yielding 12,428 deaths and 15,729 recoveries. The total number of swabs carried out so far is 506,968¹⁰. From the beginning of March 2020, all Italian people must stay at home. No unnecessary journey or social contact is allowed. They can leave home for grocery shopping or medical needs, only.

Our Cancer Institute, located in North-Eastern Italy, treats 120 outpatients daily with radiotherapy, coming from different Italian regions: 52% are over 65 years of age (several with co-morbidities) and 7% are younger than 10 years. Most children are enrolled in clinical trials and treated daily with high conformal techniques and conventional fractionation.

Starting mid-February 2020, we applied these rules for outpatients undergoing radiotherapy: 1) telephonic triage the day before the first admission, and specific clinical triage the day of admission in a dedicated area; 2) daily detailed medical history to detect the possibility of COVID-19 contagion; 3) postponement of non-essential check-ups; 4) medical evaluation or nasopharyngeal swab for patients with rhinitis, conjunctivitis, cough or fever in order to access the hospital; 5) education on hand-washing, no touching mouth, nose, and eyes; 6) cough and mask disinfection after every radiotherapy fraction; 7) compulsory surgical masks for patients, parents and healthcare workers; 8) no volunteers allowed; 9) nasopharyngeal swabs only for people with symptoms or family risk conditions. Specific rules for children: 1) different waiting rooms for adults and children; 2) only one parent allowed; 3) no patient overlapping; 4) only one patient in need of sedation per recovery room; 5) individual toys for each child to be later disinfected; 6) suspension of hospital school and limitation of psychological support.

In most hospitals worldwide, the radiotherapy department is shared by pediatric, adult and elderly patients. Therefore, although we are along a learning curve which is still ongoing¹¹, we have applied these measures to avoid the transmission of COVID-19 from asymptomatic or mild-symptomatic patients, i.e. pediatric patients, to ones with an increased death risk, i.e. the elderly. As of today, none of the patients in treatment at our Department have developed signs or symptoms of COVID-19 infection.

References:

1. Liang W, Guan W, Chen R et al. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. *Lancet Oncol*. 2020;21(3):335-337.
2. <https://www.asco.org/asco-coronavirus-information/care-individuals-cancer-during-covid-19>. Accessed: 23 March 2020.
3. Burki TK. Cancer care in the time of COVID-19. *Lancet Oncol* 2020 Published Online March 23, 2020. [https://doi.org/10.1016/S1470-2045\(20\)30201-1](https://doi.org/10.1016/S1470-2045(20)30201-1).
4. The COVID-19 Task force of the Department of Infectious Diseases and the IT Service Istituto Superiore di Sanità https://www.epicentro.iss.it/coronavirus/bollettino/Report-COVID-2019_30_marzo_eng.pdf. Accessed: 31 March 2020.
5. Wang D, Hu B, Hu C et al. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. *JAMA*. 2020;323(11):1061-1069.
6. Dong Y, Mo X, Hu Y et al. Epidemiological Characteristics of 2143 Pediatric Patients With 2019 Coronavirus Disease in China. *Pediatrics*. 2020 Mar 16. <https://doi:10.1542/peds.2020-0702>.
7. Li Q, Guan X, Wu P et al. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *N Engl J Med*. 2020; 382: 1199-1207.
8. Filippi AR, Russi E, Magrini SM, Corvò R. COVID-19 OUTBREAK IN NORTHERN ITALY: FIRST PRACTICAL INDICATIONS FOR RADIOTHERAPY DEPARTMENTS. *Int J Radiat Oncol Biol Phys*. 2020 Mar 18. <https://doi:10.1016/j.ijrobp.2020.03.007>.
9. Achard V, Tsoutsou P, Zilli T. Radiotherapy in the time of the Coronavirus pandemic: when less is better. *Int J Radiat Oncol Biol Phys*. 2020 Mar 18. <https://doi:10.1016/j.ijrobp.2020.03.008>.
10. Italian Ministry of Health http://www.salute.gov.it/imgs/C_17_notizie_4370_0_file.pdf. Accessed: 31 March 2020.
11. Krengli M, Ferrara E, Mastroleo F, Brambilla M, Ricardi U, Running a Radiation Oncology Department at the time of coronavirus: an Italian experience, *Advances in Radiation Oncology* 2020, doi: <https://doi.org/10.1016/j.adro.2020.03.003>.