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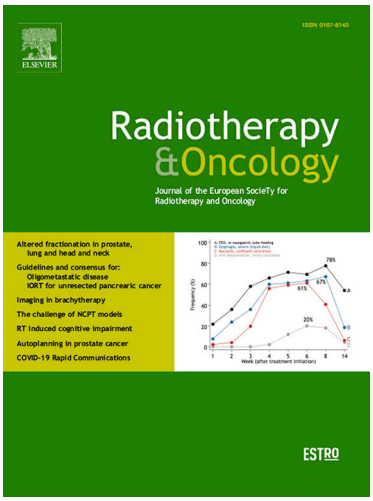

COVID-19 Rapid Letter

COVID-19 safe and fully operational radiotherapy: an AIRO survey depicting the Italian landscape at the dawn of phase 2

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COVID-19 safe and fully operational radiotherapy: an AIRO survey depicting the Italian landscape at the dawn of phase 2

Running title: *COVID-19 Phase 2 in Italian Radiotherapy Departments*

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To the Editor

Italy was the first European country heavily involved in the COrona VIrus Disease 19 (COVID-19) pandemic [1], with 294,932 cases and more than 35,000 deaths as of 18th September 2020 [2]. Despite the severity of the pandemic in the so-called Italian phase (P) 1 (18th March - 3rd May 2020), radiation therapy (RT) facilities in the country managed to efficiently reorganized themselves to maintain a high standard of care while minimizing the risk of contagion for patients and staff [3]. The safety measures adopted in the country had a positive impact on the epidemiological situation and allowed the authorities to relax the restrictions and introduce, on the 3rd May 2020, the so-called P2 (4th May 2020 – today). The present study, which represents the natural evolution of a previous investigation conducted in the middle of P1[3], aims to query the directors of Italian RT centres, through an online questionnaire, about the approach and measures undertaken during P2 of the COVID-19 pandemic to restore the normal workload and revert to a new normality.

The survey (**Text of Survey, Supplementary Materials**) was sent to 177 Directors of RT facilities, members of the Italian Association of Radiotherapy and Clinical Oncology (AIRO), between the 10th of June and the 13th of July 2020.

Eighty-nine anonymous questionnaires (response rate 50%) were received from 18 different Italian regions (**Figure, Supplementary Materials S1**) within the permitted timeframe. Fifty centres (57.2%) reported modification in their therapeutic activity both during P1 and P2. Therapeutic and outpatient activity reorganization between P1 and P2 is summarized in **Table 1**. As far as clinical activities are concerned, during P1, all the responders but 3 (3.3%) reported a reduction inferior to 30% (62, 70%) or no reduction at all (24, 27%). Transitioning from P1 to P2, 35 (39%) centres reported workload increase, 22 (25%) a complete restart of the activity and 26 (29%) no variation, while only 6 facilities (7%) reported a decrease of activity. Triage procedures put in place during P1 remained active in all facilities during P2 to limit the contagion. Analogously, with regards to admitted patients, most measures adopted during P1 were maintained during P2 (surgical masks, 89 (100%); gloves, 13 (15%); hydro-alcoholic solution prior to entry 59 (66%); interpersonal distancing, 85 (96%)). In P2 a marked increase in the supply of all PPE was registered, especially for FFP2 and FFP3 (from 49.6% to 64% and from 9.6% to 13.5%, respectively, for the radiation oncologists). Meetings were allowed as per usual in 6 (7%) centres, with restrictions (i.e. interpersonal distancing) in 68 (76%), and in remote settings in 37 (42%). Remote working solutions for non-medical staff was maintained in the transition from P1 to P2 in 37 (42%) centres, and an additional 7% (6) of centres also enforced this working modality for radiation oncologists. In P2 a drop in the quarantined personnel was registered, with 80 (90%) of the centres registering no staff in quarantine against 50 (56%) centres during P1. Six and two centres registered 1 and 2 unit of quarantined staff respectively during P2. A single COVID-19 related fatality was reported among the personnel. Thirty-one centres (35%) reported positive or suspect cases among staff. In particular, 15/231 (6.5%) radiation oncologists, 23/302 (7.6%) RT technicians, 13/97 (13%) nurses, 1/49 (2%) administrative units and 2/101 (2%) physicists were tested positive. Thirty-nine (44%) centres reported COVID-19 positive cases among patients both before the start of RT and during treatment in P1 or P2. Out of these, 29 centres discontinued treatment of all positive cases, five proceeded with treatment for asymptomatic patients, and three continued RT for asymptomatic patients excluding chest tumour patients. For patients with a documented contact with a positive subject, the majority of the RT facilities requested a swab (25/48 52.1%) while 9/48 (18.8%) decided for a temporary interruption of the treatment. Fourteen centres instead opted for continuing the treatment, with (10/48, 20.8%) or without (4, 8.3%) extra precautions.

The previous investigation [3] revealed that the prime focus of RT centres during P1 was to guarantee the continuity and the safety of the treatments for patients with high-risk conditions, while minimizing undue risk for conditions for which care can be safely deferred. Thanks to all the adopted measures to limit contagion among staff and patients, the pandemic effect on the Italian RT centres during P1

was, ultimately, modest, with most centres (55, 61.8%) reporting no reduction or a decrease in clinical activity not higher than 10%. Therefore, the average reduction of clinical activities in Italy turned out to be much less marked than that of Europe (38% centres reporting a reduction < 80%) and US (84% centres reporting a reduction < 80%) [4]. The preventive measures put in place remained virtually unchanged during the transition from P1 to P2. This was reflected by the proportion of centres registering positive cases dropped down from 43.8% in P1 to 10.1% in P2, and in the maximum reported number of positive staff cases per centre, which decreased from 18 to 2. The reduction of registered daily cases is imputable to the strict safety measures adopted and not to the decrease in number of treated patients. On the contrary, with the advent of P2, RT Directors globally reported a progressive realignment with the pre COVID-19 era workload for both outpatient and clinical activities, with a partial or complete reactivation of the previously interrupted or postponed treatments, also thanks to the several guidelines published to help clinicians coping with the novel pandemic scenario [5–14] [15–17]. Therefore, the present survey demonstrated how the planned progressive return to a novel routine during P2 has been attained by most Italian RT centres, maintaining high safety standards against a possible new spread of the infection and registering a lower number of positives cases among both patients and health professionals despite the resumption of a pre COVID-19 era similar workload. Such reorganization will be crucial in prevention of the potentially detrimental impact of a possible second wave of pandemic on the society and health system.

Table 1. Summary of activity reorganization in Italian RT departments during Phase 1 and Phase 2 and trend between the two phases.

Therapeutic activity reorganization				
Phase 1 (18th March - 3rd May 2020)		**Phase 2** (4th May 2020 – today)		**Trend** ↗
125 responders	**N (%)**	89 responders	**N (%)**	↓
No substantial modification	39 (31.2)	*No substantial modification respect to Phase 1*	39 (43.8)	↑
Procrastinating treatment on a case-by-case basis	46 (36.8)	*Postponed treatments (Phase 1) were re-evaluated on a case-by-case basis*	41 (46.1)	-
Optimizing home cures of symptomatic patients	17 (13.6)	*Palliative indications have been reallocated as in the pre-COVID-19 period*	24 (27.0)	-
Keeping only curative treatments otherwise not procrastinable	14 (11.2)	*Keeping only curative treatments otherwise not procrastinable*	2 (2.2)	↓
Favouring of short-term treatments (hypofractionation)	51 (40.8)	*Favouring hypofractionation even when weakly recommended*	14 (15.7)	↓
		Favouring hypofractionation only when strongly recommended	34 (38.2)	↓
Ongoing treatments interruption for particularly fragile patients	5 (0.04)	*Treatments that had been discontinued were resumed*	13 (14.6)	-
Outpatient activity reorganization				
Phase 1 (18th March - 3rd May 2020)		**Phase 2** (4th May 2020 – today)		
125 Responders	**N (%)**	89 responders	**N (%)**	
No substantial change	9 (0.07)	*No changes since no modification have been introduced during Phase 1*	12 (13.5)	↑
Ordinary check-ups have been cancelled	80 (64.0)	*Ordinary check-ups have been reinstated as normal*	69 (77.5)	-
		Ordinary check-ups remain cancelled	9 (10.1)	↓
First visits have been cancelled	2 (0.02)	*First visits have been restarted*	11 (12.4)	-
Telematic consultations activated for cancelled visits	54 (43.2)	*Telematic consultation for cancelled visits*	15 (16.9)	↓

List of abbreviations: **COVID-19:** Coronavirus disease 19; **N:** number of centres.

NB. P1 results refer to the previously published work (*Jereczek-Fossa BA, Pepa M, Marvaso G, et al. COVID-19 outbreak and cancer radiotherapy disruption in Italy: Survey endorsed by the Italian Association of Radiotherapy and Clinical Oncology (AIRO) Radiother Oncol. 2020;149:89-93. doi:10.1016/j.radonc.2020.04.061*). P2 results, instead, were collected in the context of the current investigation.

Authors' contribution

BAJF, MP, MZ, GM, RC and VD were responsible for conception and design of the study and wrote the first draft of the manuscript. AB, MB, GC, ARF, PF, MAG, DG, GI, AM, LM, IM, AM, MM, DM, RP, SP, VT, MT, MCL were responsible for data collection and wrote sections of the manuscript. BAJF, MP, MZ and GM were responsible for data analysis. All authors contributed to manuscript revision and read and approved the submitted version.

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Highlights

- Italy experienced one of the deadliest COVID-19 outbreaks in the world (phase 1: 8th March - 3rd May 2020), and after a ten-week lockdown period, the country has slowly reopened (phase 2: 4th May 2020 – today).
- A survey was administered to Italian radiation therapy (RT) departments to depict the current scenario.
- During phase 1, RT departments managed to contain the contagion without massively reducing the workload.
- Virtually all safety measures still hold in phase 2 and has allowed RT departments to safely restore activities and catch up on clinical backlog.
- Reorganization of activities will be crucial to prevent the potential detrimental impact of a second wave of pandemic.

Conflicts of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.