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COVID-19 Rapid Letter

Nationwide survey of COVID-19 prevention measures in Japanese radiotherapy departments via online questionnaire for radiation oncologists ☆



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Coronaviruses are pathogens that target the human respiratory system. Previous outbreaks of coronaviruses include severe acute respiratory syndrome (SARS) [1] and Middle East respiratory syndrome (MERS) [2]. In December, 2019, an outbreak of pneumonia of unknown cause was reported in Wuhan, China [3]. Chinese scientists rapidly identified the causative agent as a novel coronavirus (SARS-CoV-2) by sequencing the complete genome from lower respiratory tract samples of patients in Wuhan [4]. The WHO named this disease “coronavirus disease 2019” (COVID-19). Having quickly spread around the world, COVID-19 is now a global health concern. According to the WHO report, the top 10 global cases of COVID-19 by April 23, 2020 were 800,926 in the United States, 208,389 in Spain, 187,327 in Italy, 148,046 in Germany, 133,499 in the United Kingdom, 117,961 in France, 98,674 in Turkey, 85,996 in Iran, 84,302 in China and 62,773 in Russian Federation [5]. In Japan, the first patient with COVID-19 was detected on January 15, and the number of cases reached 12,192 in Japan by April 23, 2020 [6], which is relatively low compared to other countries, despite the early outbreaks. COVID-19 is now an important issue in Japanese radiotherapy departments. According to the DIRAC database, Japan has 800 radiotherapy centers, the third largest number in the world [7]. Chinese researchers report that cancer patients and cancer survivors are at increased risk of severe events associated with COVID-19 compared to noncancer patients [8]. Additionally, cancer patients might have more chance to be exposed to SARS-CoV-2 because they are supposed to receive radiotherapy every weekday for multiple weeks. For these patients, treatment would have to be discontinued for several weeks if they were to

contract COVID-19, potentially leading to inferior treatment outcomes [9]. Therefore, COVID-19 prevention measures in radiotherapy departments are urgently needed to protect patients.

Infection prevention and control (IPC) usually include standard precautions and transmission-based precautions [10]. Careful adherence to the recommended IPC practices is known to decrease the transmission of infectious agents in healthcare settings [11,12]. It was reported that suboptimal hand-washing, suboptimal hand hygiene before and after contact with patients, and improper personal protective equipment (PPE) were significant risk factors for COVID-19 infection among healthcare workers [13]. Radiation oncologists in Wuhan, China recently pointed out the importance of patient education and staff training to prevent infection in radiotherapy settings during the COVID-19 pandemic [14]. Whether radiotherapy departments in Japan are aware of and properly practice IPC measures is unknown. Here, we investigate the current status of the practice of COVID-19 prevention measures in Japanese radiotherapy departments using an online questionnaire.

This study was approved by the academic committee of the Japanese Society for Radiation Oncology (JASTRO). The online questionnaire was developed using Google Forms (www.google.com/forms). The questions and answers were shown in Table 1. Our first version of the online questionnaire was distributed to radiation oncologists in Osaka to investigate the measures used to prevent COVID-19 as of April 10, 2020, 3 days after the first declaration of a state of emergency for 7 prefectures including Tokyo and Osaka. This version of the questionnaire contained 28 questions. One question was added, and the questionnaire then was sent to JASTRO members throughout Japan via JASTRO-gram on April 16, 2020, when the areas under declaration of state of emergency were expanded to all 47 prefectures in Japan. We also asked the respondents to revise their responses if their COVID-19 measures had changed or if there was an infection outbreak in their institutions. The aggregated results were analyzed using the autoanalysis function of Google Forms and disclosed immediately to respondents. All questionnaire results were downloaded from the website on April 23, 2020 for our research.

The majority of the respondents (81.0%) indicated that they had taken some infection control measures for COVID-19. Proper hand

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Table 1
Study questions and responses.

	Question	Answer choices	Respondents (n = 184)	
			n	%
1	What is your institution type?	Research institute	48	26.1
		Community hospital	126	68.5
		Clinic	10	5.4
2	What types of radiotherapy does your institution offer? (multiple answers allowed)	X-ray	180	97.8
		Proton therapy	7	3.8
		Carbon-ion	4	2.2
		Brachytherapy	60	32.6
3	Number of annual radiotherapy cases at your department	~200	47	25.5
		201~500	85	46.2
		501~1000	44	23.9
		1001~1500	5	2.7
		1501~	3	1.6
4	Does your institution accept COVID-19 patients for hospitalization?*	Yes	150	82.0
		No	33	18.0
5	Does your institution practice any infection control measures to prevent COVID-19?	Yes	35	19.0
		No	149	81.0
6	Do you check patients for COVID-19 symptoms daily?	Yes	144	78.3
		No	31	16.8
		I don't know	9	4.9
7	Do you check RT staff for COVID-19 symptoms daily?	Yes	149	82.0
		No	30	16.3
		I don't know	5	2.7
8	Do RT staff who have contact with patients practice hand hygiene?	Yes	182	98.9
		No	1	0.5
		I don't know	1	0.5
9	Do RT staff who have no patient contact practice hand hygiene?	Yes	159	86.4
		No	5	2.7
		I don't know	20	10.9
10	Do RT patients practice hand hygiene?	Yes	100	54.3
		No	27	14.7
		I don't know	57	31.0
11	Do RT staff who have contact with patients wear masks?	Yes	177	96.2
		No	7	3.8
		I don't know	0	0
12	Do RT staff who have no patient contact wear masks?	Yes	157	85.3
		No	20	10.9
		I don't know	7	3.8
13	Do RT patients who see other patients wear masks?	Yes	93	50.5
		No	87	47.3
		I don't know	4	2.2
14	Do you wear PPE when contacting with RT patients?†	Yes	15	8.2
		No	167	91.8
15	Do you sanitize what everyone touches? (keyboards, doorknobs, electrical switches, etc.) §,	Yes	122	80.8
		No	29	19.2
16	Do you ventilate the air in the Examination rooms?*	Yes	108	58.7
		No	76	41.3
17	Do you ventilate the air in patient waiting rooms?	Yes	110	59.8
		No	74	40.2
18	Do you ventilate the air in RT operating rooms?*	Yes	79	43.2
		No	104	56.8
19	Do you ventilate the air in RT treatment rooms?*	Yes	38	20.8
		No	145	79.2
20	Do you ventilate the air in RT staff break rooms?*	Yes	91	49.7
		No	92	50.3
21	Is social distancing maintained between patients?	Yes	116	63.0
		No	57	31.0
		I don't know	11	6.0
22	Is social distancing maintained between staff at work?	Yes	60	32.6
		No	118	64.1
		I don't know	6	3.3
23	Is social distancing maintained between staff during breaks?	Yes	87	47.3
		No	72	39.1
		I don't know	25	13.6
24	Is radiation treatment time divided into outpatient and inpatient hours?*	Yes	53	29.0
		No	130	71.0
25	Have you postponed patient follow-up dates?*	Yes	114	62.3
		No	62	33.9
		Other	7	3.8
26	Have you postponed the start of RT when possible?‡	Yes	72	39.8
		No	109	60.2
27	Have COVID-19 cases occurred in patients served by your RT department?	Yes	0	0.0
		No	184	100.0

Table 1 (continued)

	Question	Answer choices	Respondents (n = 184)	
			n	%
28	Have COVID-19 cases occurred among your RT department staff?	Yes	1	0.5
		No	183	99.5
29	Have COVID-19 cases occurred at your institution outside the RT department?	Yes	57	31.0
		No	127	69.0

Abbreviations: RT, Radiotherapy; PPE, personal protective equipment.

* 1 missing data, † 2 missing data, ‡ 3 missing data, § 33 missing data, || This question was added on April 16, 2020.

hygiene was practiced at some but not all of the institutions, with 54.3% of the respondents reporting that patients performed hand hygiene, 96.2% reporting that staff who had contact with patients performed hand hygiene, and 86.4% reporting that staff who did not have contact with patients performed hand hygiene. Only 50.5% of respondents indicated that all patients wore masks; 96.2% reported that all staff who had direct contact with patients wore masks, and 85.3% reported that all staff who had no direct contact with patients wore masks. Only 8.1% of the respondents reported that they used PPE in their radiotherapy practice. The number of respondents indicated that the radiotherapy clinic was ventilated was 58.7% for the examination room, 59.8% for the patient waiting room, 42.9% for the operation room, 49.5% for the staff room, and 20.7% for the treatment room. In addition, 63.0% of the respondents indicated that proper social distancing was maintained between patients, while fewer respondents reported such between staff at work (32.6%) or while on breaks (47.3%). These results indicated that there were differences in IPC measures for COVID-19 between radiotherapy departments. In addition, at this time, it was found that COVID-19 occurred in only one institution, and that COVID-19 had little impact on radiotherapy practice in Japan as a whole. Although the number of COVID-19 in Japan is relatively low compared to other countries, the impact of COVID-19 on radiotherapy should continue to be closely monitored.

This study has several limitations. While Japan has 800 radiotherapy centers, only 184 respondents participated in this study. These respondents might be radiation oncologists who were interested in COVID-19 prevention measures. If all radiation oncologists in Japan were asked to respond, the percentage of those taking measures to prevent COVID-19 might be even lower. Furthermore, some overlap in the responses may exist because the questionnaire response is not strictly limited to one respondent per institution. In order to overcome the limitations of our survey, JASTRO have decided to conduct periodic nationwide surveys of radiotherapy departments.

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