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Serial Screening for COVID-19 in Asymptomatic Patients Receiving Anticancer Therapy in the United Arab Emirates

Patients with cancer, especially those receiving anticancer therapy, are at risk amidst the coronavirus disease 2019 (COVID-19) pandemic.[1-3] Given the frequency of asymptomatic COVID-19,[2,4,5] and presymptomatic transmission,[5] symptom-based screening may inadequately triage patients to safely resume anticancer therapy.[2,6]

We thus implemented a pilot microbiologic screening program in Al Zahra Hospital in the United Arab Emirates (UAE), identifying presymptomatic COVID-19 in nearly 1 in 10 patients with cancer.[2] We have since expanded this program across serial anticancer therapy cycles.

Methods | Asymptomatic patients with solid tumors receiving anticancer therapy were consecutively enrolled at Al Zahra Hospital, Dubai, between March 13, 2020, to May 26, 2020, and followed until June 29, 2020. Patients were asymptomatic at enrollment.

Specific screening schedules were developed: 48 hours before each cycle of anticancer therapy for systemic chemotherapy or immunotherapy, weekly for daily radiation therapy or concurrent chemoradiation therapy, and monthly for daily targeted or hormonal therapy.

All patients were prospectively screened for COVID-19 symptoms,[2] and underwent a nasopharyngeal swab for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) polymerase chain reaction (PCR) at each screening. Patients underwent additional screening for new pulmonary infiltrates, symptoms, or at physician discretion. Anticancer therapy, besides hormonal therapy, was held until 2 consecutively negative PCR results and clinical recovery or per physician discretion. Patients with COVID-19 ceased further PCR screening. Health care workers underwent daily self-screening for symptoms and weekly PCR screening.

The Al Zahra Hospital research ethics board approved the study and waived written informed consent for this quality improvement project because all patients with cancer and health care workers were mandated to undergo testing. Data were summarized as percentages and median (SD) range. A prespecified α of .05 was used; 95% confidence intervals for proportions via the binomial method, and proportions compared via the Fisher exact test. Data analysis was undertaken using Microsoft Excel (version 16.35, Microsoft).

Results | Overall, 109 asymptomatic patients with cancer were enrolled, undergoing 384 screening swabs across a median of 2 cycles (range, 1-8). Demographic characteristics are shown in **Table 1**.

Thirty-two (29.4%, 95% CI, 21.0%-38.9%) patients acquired COVID-19; among them, 25 (78.1%) were diagnosed while asymptomatic and 7 (21.9%) presented with interval symptoms after negative PCR screening results. The asymptomatic screening swabs had a yield of 6.4% (25 of 384 screening tests) (**Table 2**).

Among patients diagnosed with COVID-19, most had mild infection (27/32, 84.4%), with 6 (18%) remaining asymptomatic. Nine (28.1%) patients with COVID-19 were admitted to the hospital, 6 owing to COVID-19 and 3 for others reasons (1 adverse drug reaction, 1 palliation, and 1 rectal abscess). Four patients (12.5%) with COVID-19 required intensive care, and 4 died (12.5%).

Table 1. Patient Demographics and Clinical Outcomes for Patients With Cancer Undergoing Serial Screening for COVID-19

Variable	No. (%)			
		Patients with COVID-19		Without COVID-19
	Overall cohort (n = 109)	Asymptomatic (n = 25)	Symptomatic (n = 7)	Asymptomatic (n = 77)
Demographics				
Age, median (range), y	55 (17-78)	45 (17-76)	55 (45-66)	54 (48-66)
Female sex	55 (50.5)	14 (56)	3 (42.9)	38 (49.4)
Cancer type				
Breast	31 (28.4)	7 (28.0)	2 (28.6)	22 (28.6)
Colorectal	22 (20.2)	6 (24.0)	2 (28.6)	14 (18.2)
Lung	6 (5.5)	2 (8.0)	1 (14.2)	3 (3.9)
Head/neck	8 (7.4)	2 (8.0)	0	6 (7.8)
Thyroid	11 (10.1)	1 (4.0)	0	10 (13.0)
Sarcoma	7 (6.4)	2 (8.0)	0	5 (6.5)
Other	24 (22.0)	5 (20.0)	2 (28.6)	17 (22.1)
Outcomes				
Hospitalization	17 (15.6)	7 (28.0)[a]	2 (28.6)	8 (10.4)[b]
ICU	8 (7.3)	2 (8.0)	2 (28.6)	4 (5.2)[b]
Death	8 (7.3)	3 (12.0)	1 (14.2)	4 (5.2)[b]
Anticancer therapy delay, median (range), d	13 (0-26)	16 (0-26)	14.5 (11-18)	4 (0-21)

Abbreviations: COVID-19, coronavirus disease 2019; ICU, intensive care unit.

[a] Three admissions were not related to COVID-19.

[b] Not related to COVID-19.

Table 2. COVID-19 Diagnoses at Screening per Cycle

Screening cycle	No. of asymptomatic patients screened	Confirmed COVID-19 cases, No. (%)
1	109	7 (6.4)
2	102	6 (5.9)
3	88	4 (4.5)
4	53	5 (9.4)
≥5	32	3 (9.4)

Abbreviation: COVID-19, coronavirus disease 2019.

Patients with COVID-19 were significantly more likely to be hospitalized (28.1% vs 10.4%; $P = .04$) (Table 1) and died numerically more frequently (12.5% v. 5.2%; $P = .23$). All surviving patients with COVID-19 resumed chemotherapy after a median of 16 days (0-26) vs 4 days (range 0-21 days) for uninfected patients.

Three presymptomatic clinicians (3/12, 25%; 1 physician, 2 nurses) were diagnosed with COVID-19 by PCR screening and developed mild symptomatic infections. Epidemiologic investigation traced 2 health care infections to care of presymptomatic patients with COVID-19.

Discussion | Our microbiologic screening program identified a high rate of COVID-19 among patients with cancer, with 32 of 109 (29.4%) patients developing COVID-19 during the study period. In comparison, the cumulative prevalence of COVID-19 in the UAE was 496.3 per 100 000 residents as of June 29, 2020. Most infections were identified in the presymptomatic phase. In the absence of this microbiologic screening, such patients would have proceeded with anticancer therapy unaware of their COVID-19 infection, which may have increased their complication risk.[3]

Although limitations of this study included small sample size and no control group, implementation of microbiologic screening for SARS-CoV-2 among patients with cancer guided continuation of anticancer therapy. As we work to provide safe uninterrupted oncologic care amidst the COVID-19 pandemic, microbiologic screening should be considered for patients with cancer receiving anticancer therapy.

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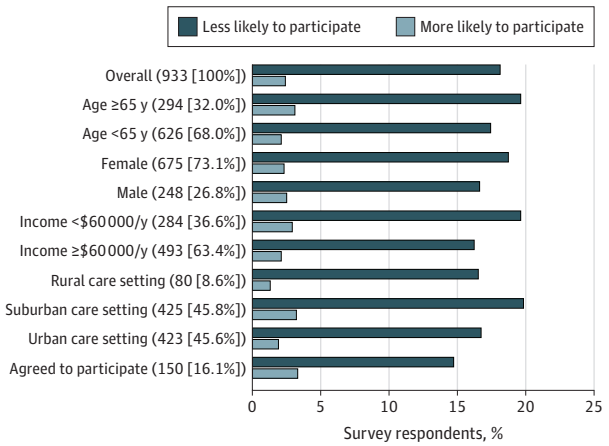
Association of the COVID-19 Outbreak With Patient Willingness to Enroll in Cancer Clinical Trials

The coronavirus disease 2019 (COVID-19) outbreak substantially reduced cancer clinical trial accrual.[1] Many sites temporarily paused enrollment owing to state, local, sponsor, or institutional restrictions intended to prevent the spread of COVID-19.[2] Once site and enrollment restrictions lift, it is unclear whether patients will be as willing to participate in clinical research as before the outbreak, especially if community COVID-19 transmission is still occurring. To examine this, we surveyed a large group of cancer survivors about their attitudes toward trial participation during the COVID-19 pandemic.

Methods | Participants were included from the American Cancer Society Cancer Action Network's Survivor Views panel (established September 2019). Panelists were 18 years or older, had been diagnosed with and/or treated for cancer within the last 5 years, and were US residents. We designed a series of COVID-19–related questions regarding disposition toward trials, willingness to participate, and reasons for nonparticipation. These questions were incorporated into the existing survey program[3] and sent to 3054 participants on May 27, 2020, through June 17, 2020. A total of 933 responses (30.6%) were received.

Figure 1. Change in Likelihood to Participate in Cancer Clinical Trials in Light of COVID-19 Pandemic



Responses indicating no difference are not shown. There were no differences in the rates of those replying that they were more likely to participate vs less likely to participate by levels of age, gender, household income, or care setting. Percentages are based on respondents with known data.

Subgroup examinations by race were not included owing to the small sample of non-White patients, including Black (n = 33), Asian/Pacific Islander (n = 19), and Native American (n = 14). Unknown patient data included age (n = 13), race (n = 13), household income (n = 9), gender (n = 9), and care setting (n = 5). One participant indicated that they were transgender. For 147 participants, household income was recorded as *prefer not to answer*. The majority of participants (69.1%) had 1 of the 4 most common cancers (breast [45.9%], colorectal [7.4%], lung [7.7%], or prostate [8.1%]).

The survey study was deemed exempt by the Morehouse School of Medicine Institutional Review Board. Patient informed consent was required of participants in the study. The sample size enabled estimation of any particular response to within 3.3%. We used χ^2 tests for comparisons, and $\alpha = .05$ indicated statistical significance.

Results | Among the 933 respondents with known data, 675 of 924 (73.1%) were female, 33 of 920 (3.6%) self-reported as Black, and 284 of 924 (36.6%) had an annual household income of $60 000 or less. Overall, 316 of the 933 (33.9%) respondents reported a prior conversation with their physician about clinical trials, and 192 (20.6%) were offered trial participation. Among the 192 respondents offered a trial, 150 (78.1%) said yes and 116 (60.4%) eventually enrolled, resulting in an overall participation rate of 12.4%. Among 662 respondents not offered trial participation, 519 (78.4%) reported being somewhat or very likely to enroll if offered a trial.

All respondents were asked if the pandemic made them more or less likely to participate in a clinical trial, or if it made no difference. Among 907 respondents, the majority (721 [79.5%]) indicated no difference; remaining respondents were more than 7 times more likely to indicate that the pandemic made them less likely to enroll in a clinical trial (164 [18.1%] vs 22 [2.4%]). Response patterns were similar across demographic, socioeconomic, and care settings, and in the subset of 150 participants who previously agreed to trial participation (**Figure 1**). Among the 164 respondents less likely to en-