As the coronavirus disease 2019 (COVID-19) pandemic continues, cancer patients were found to be vulnerable and to have difficulty receiving routine care. We analyzed patients who received screening for COVID-19 at The Cancer Institute Hospital of Japanese Foundation for Cancer Research from April 13, 2020, to June 19, 2020. A total of 58,584 cases were screened by a questionnaire, and 231 patients underwent chest computed tomography (CT), among which 12 patients had typical CT findings indicative of COVID-19, and 107 patients received the polymerase chain reaction (PCR) test for SARS-CoV-2. 7

After answering the questionnaire, 231 patients underwent a second screening (Table S1). The median patient age was 67 years (IQR, 55–72), and 116 patients (50.2%) were men. Cancer was active in 174 patients, with 77 (33.3%) patients with metastasis and 58 (25.1%) with recurrence. The most frequent cancer type was lung cancer (n = 42), followed by breast cancer (n = 31) and gastric cancer (n = 28). Within 1 month before the screening, 142 (61.5%) patients received cancer treatment. Cytotoxic chemotherapy was most frequent (n = 91), followed by molecular-targeting therapy (n = 35) and immunotherapy (n = 26).

Radiological features were independently reviewed by two radiologists and categorized into the following groups according to the expert consensus statement of the Radiological Society of North America (Simpson et al., 2020): negative for pneumonia (Cov19Neg, n = 145, 62.8%), indeterminate appearance or nonspecific features of COVID-19 pneumonia (Cov19Ind, n = 40, 17.3%), atypical appearance or uncommonly reported features of COVID-19 pneumonia (Cov19Aty, n = 34, 14.7%), and typical appearance or commonly reported imaging features of greater specificity for COVID-19 pneumonia (Cov19Typ, n = 12, 5.2%) (Table S1). Based on clinical information and
CT findings, 107 patients underwent the PCR test for SARS-CoV-2 but no patients got positive results.

There were various final diagnoses of symptoms that required screening (Table S1). The most common diagnosis was bacterial pneumonia, including aspiration pneumonia (n = 33, 14.3%), followed by cancer-related conditions such as tumor progression and adverse events due to cancer treatment. However, the specific cause for COVID-19-like symptoms was not identified in approximately one-fourth of patients.

We report here the clinical characteristics of 231 patients who underwent screening using chest CT and PCR for SARS-CoV-2. The cornerstone of COVID-19 diagnosis is the PCR test, which varies in sensitivity and may generate false negatives. Thus, multiple studies discuss the combination of PCR and chest CT for increased accuracy of detecting COVID-19. One meta-analysis of 16 studies (n = 3,186) shows that the sensitivity of chest CT was 92% (95%CI, 86%–96%), though the sensitivity of each study depends on the patients’ characteristics, such as the severity of pneumonia (Xu et al., 2020).

In the present study, all patients underwent chest CT to increase the pretest probability of COVID-19 and to facilitate diagnoses. Also, the imaging facility is physically separated from the hospital, which prevents virus transmission. Despite increasing the pretest probability, we did not detect any positive cases of COVID-19, suggesting that abnormal CT findings were more associated with multiple causes among cancer patients (Table S1). These findings should serve to caution oncologists that COVID-19-like symptoms and CT findings do not always indicate COVID-19 pneumonia. Because no cases of COVID-19 were detected in our research, we were unable to evaluate the sensitivity and specificity of the combination PCR and chest CT analyses. However, no studies other than ours have focused on the incidence of COVID-19 in symptomatic patients with cancer, and our results were consistent with the low prevalence (around 1%) of COVID-19 in asymptomatic patients reported by cancer hospitals in the United Arab Emirates and the United Kingdom (Al-Shamsi et al., 2020b; Lee et al., 2020b).

Our research shows that cancer-associated causes outweighed the possibility of COVID-19 among cancer patients with COVID-19-like symptoms. Although there were no confirmed cases of COVID-19 via PCR, the strategy employing CT and separating patients suspected with COVID-19 facilitated the diagnosis of patients with COVID-19-like symptoms. Appropriate management of separation, screening, and diagnosis in a cancer hospital is required for maintaining cancer treatment during this pandemic era.

SUPPLEMENTAL INFORMATION
Supplemental Information can be found online at https://doi.org/10.1016/j.ccell.2020.09.017.

ACKNOWLEDGMENTS
The hard work of all staff members who participated in the screening processes is appreciated. We thank all members of the COVID-19 Working Group at The Cancer Institute Hospital of Japan for Cancer Research: Ai Hirota, Mikako Tanba, Yuke Shirotch, Takehon Fukuta, Takashi Okabe, Hideki Uyy, Yuku Ishihara, Yuku Mishima, Noriko Nishimura (Department of Hematology Oncology), Daisaku Kamiimebeppu, Taro Sat, Hiroki Osuni, Izuna Nakayama, Takeru Watsuki, Akira Oki, Daisuke Takahari, Eiji Shizozaki, Mitsukuni Suegaya, Keishe Chin (Department of Gastroenterological Hemotherapy), Saori Kawai, Jun Masuda (Department of Breast Medical Oncology), Akhiro Ohmoto, Tetsuya Urakai, Makiko Ono (Department of Medical Oncology), Takaaki Furuwaka (Department of Hepato-Biliary-Pancreatic Medicine), Takahiro Kobawa, and Shi-gehisa Kitano (Center for Advanced Medical Development).

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