Cancer Patients With COVID-19 May Have Higher Risk of Severe Illness and Death

Cancer type, stage and treatment appear to affect the likelihood of poor outcomes.

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People with cancer who contract the new coronavirus appear to have a greater risk for severe COVID-19 illness and death, but this may depend on their cancer stage and the type of treatment they are receiving, according to recent research. In fact, those with early-stage cancer may fare as well as people who have not had cancer.

Researchers from some of the earliest and hardest hit epicenters of the COVID-19 pandemic described outcomes among cancer patients with the coronavirus (officially known as SARS-CoV-2) during a special session the American Association for Cancer Research (AACR) virtual annual meeting last week. Soon after the conference, another group of researchers published an analysis of mortality among cancer patients in New York City.

Early reports from China, where the pandemic originated in late December, showed that older people, those with compromised immune systems and those with underlying health conditions are more susceptible to severe COVID-19. One study saw a death rate of 6% for people with cancer—more than twice as high as the overall estimated COVID-19 mortality rate in China, but lower than the rates seen in people with diabetes (7%) or cardiovascular disease (11%).

Chemotherapy medications and some targeted therapies for cancer can cause neutropenia, a temporary depletion of immune system white blood cells that fight infection. People who receive bone marrow stem cell transplants or CAR-T therapy or for blood cancers typically receive strong chemotherapy to kill off existing blood cells and make room for the new ones. Conversely, immunotherapies such as checkpoint inhibitors and CAR-T therapy unleash natural or engineered T cells to fight cancer, which in some cases can trigger an excessive immune response that leads to harmful inflammation.

Two reports at the AACR meeting provided updates from China. Li Zhang, MD, PhD, of Tongji Medical College described outcomes among 28 cancer patients with COVID-19 in Wuhan, the initial epicenter of the pandemic.

Seven had lung cancer and the remainder had 13 other cancer types. Just over a third had Stage IV, or metastatic, cancer. Nearly 30% acquired the coronavirus at medical facilities. About half had severe disease, 10 patients required mechanical ventilators and eight died—mostly from acute respiratory distress syndrome—giving a mortality rate of 29%.

Although three quarters had ever undergone surgery, radiation or chemotherapy, a majority had not received treatment recently. Only one person received radiation, three received chemotherapy, two received targeted therapy and one received immunotherapy within two weeks prior to their COVID-19 diagnosis. Recent cancer treatment was associated with a fourfold increased risk of severe outcomes. However, the single patient treated with a checkpoint inhibitor (for liver cancer) had mild COVID-19 and a short hospital stay.

Similarly, as part of his discussion of immunotherapy for cancer in the COVID-19 era, Paolo Ascierto, MD, of the National Tumor Institute in Naples, noted that just two out of 400 patients on immunotherapy at his institute tested positive for the coronavirus, they were asymptomatic and they recovered quickly, leading him to speculate that immunotherapy might somehow be protective against COVID-19.

Hongbing Cai, MD, of Zhongnan Hospital of Wuhan University, presented data on 105 cancer patients and 536 age-matched people without cancer at 14 hospitals in Hubei province who developed COVID-19. Results were also published in Cancer Discovery. Twenty-two had lung cancer, 13 had gastrointestinal cancers, 11 each had breast cancer and thyroid cancer, nine had blood cancers such as leukemia or lymphoma—which affect white blood cells that carry out immune responses—and six each had cervical and esophageal cancer.

“In general, patients with cancer deteriorated more rapidly than those without cancer,” Cai’s team reported. Cancer patients with COVID-19 were nearly three times more likely to have severe or critical illness (34%), be admitted to an intensive care unit ICU (19%) or be put on a ventilator (10%). What’s more, people with cancer were about twice as likely to die as COVID-19 patients without cancer (11% versus 5%, respectively).

People with blood cancers or lung cancer, as well as those with metastatic cancer, had a higher risk of severe events. Two thirds of the blood cancer patients and half of the lung cancer patients had such events. Among the lung cancer patients, 18% were put on ventilators and 18% died. In contrast, no one with breast, thyroid or cervical cancer required ventilators or died.

In particular, those with blood cancers—more than half of whom had severe immune suppression—had about a 10-fold higher risk of severe events or death. Two thirds had severe symptoms, 22% were put on ventilators and 33% died. “These patients all had a rapidly deteriorated clinical course once infected with COVID-19,” the researchers wrote.

People with metastatic cancer had about a six-fold higher risk of severe events or death. But people whose cancer had not yet spread were not significantly more likely to have severe events or die than COVID-19 patients without cancer. People currently on cancer treatment and those with a history of cancer who had completed treatment were both at higher risk.

People who underwent surgery within the previous 40 days had higher rates of severe events, ICU admission, ventilator use and death, but this was not the case for those who received only radiation. In this study, unlike Zhang's and Ascierto's, people treated with immunotherapy did not fare so well. Four of the six patients who recently received checkpoint inhibitors had critical symptoms and two died.

"Based on our analysis, COVID-19 patients with cancer tend to have more severe outcomes when compared to the non-cancer population," the researchers wrote. "Although COVID-19 is reported to have a relatively low death rate of 2% to 3% in the general population, patients with cancer and COVID-19 not only have a nearly three-fold increase in the death rate than that of COVID-19 patients without cancer, but also tend to have much higher severity of their illness."

In a related study, Marina Chiara Garassino, MD, of Fondazione IRCCS National Tumor Institute in Milan, presented the first data from the international TERAVOLT registry, which is collecting data about COVID-19 among people with lung cancer and other thoracic malignancies. She noted that TERAVOLT was registering around 70 new cases per week from around the world per week.

This population may be especially vulnerable to COVID-19 due to older age, lung damage, smoking and underlying health conditions, Garassino said. What's more, the symptoms of COVID-19 overlap with lung cancer, making diagnosis very challenging.

Garassino described results from the first 200 cancer patients with COVID-19 in more than 20 countries. Non-small-cell lung cancer was the most common type, and nearly three quarters had metastatic disease. About 20% received only targeted therapy, 33% received chemotherapy alone and 23% received immunotherapy alone.

A majority (76%) were hospitalized, but most were not offered intensive care for COVID-19; just 9% were admitted to an ICU and 3% were put on ventilators. More than a third (35%) died, mostly due to COVID-19 rather than cancer. Specific types of cancer treatment were not significantly associated with an increased risk of death.

But not all studies have seen worse COVID-19 outcomes among people with cancer. Fabrice Barlesi, MD, PhD, and colleagues looked at 137 COVID-19 patients with cancer at Gustave Roussy, a cancer center near Paris. They had a variety of cancer types, with blood cancers and breast cancer being most common. Nearly 60% had active advanced disease while 40% were in remission or being treated with potentially curative therapy.

Within this group, 25% had worsening COVID-19 after admission, 11% were admitted to the intensive care unit (ICU) and 15% died. Again, people with blood cancers were more likely to have worse outcomes. Treatment with chemotherapy within the past three months—but not targeted therapy or immunotherapy—doubled the likelihood of worsening disease. But this only applied to people with active or metastatic cancer, not those who had localized disease or were in remission.

The 15% death rate among people with cancer at Gustave Roussy was lower than the 18% rate for all COVID-19 patients in Paris and in France, Barlesi said. His team concluded that both incidence

and outcomes of COVID-19 among cancer patients seem to be comparable to the population as a whole. However, people with blood cancers, those treated with chemotherapy and frail patients are at greater risk.

Discussing how to manage cancer patients during the COVID-19 pandemic, Cai recommended self-protective isolation, strict infection control in hospitals and shifting some medical services online.

With regard to cancer treatment, she said, clinicians need to develop individualized plans based on a patient's tumor type and stage of disease. She added that postponing surgery, if appropriate, should be considered in areas with current outbreaks. Radiation therapy, she said, could go ahead according to existing treatment plans with intensive protection and surveillance. Whether people with early-stage cancer need to postpone their treatment remains an unanswered question, she said.

Click here to read the abstracts from the AACR COVID-19 and cancer session.
Learn about "What People With Cancer Need to Know About the New Coronavirus."
