Number of COVID vaccine breakthroughs in cancer patients on the rise

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For cancer patients, COVID-19 poses a particular risk due to their often compromised immune systems, weakened by therapy or disease, which is why vaccination is very important for their protection. Now, a recent

study led by MedUni Vienna shows that, due to omicron, there is an increasing number of breakthrough infections in people with cancer, especially while they are undergoing cancer therapy. The researchers of the study, which has just been published in the journal *Cancer Cell*, emphasize that adhering to protective measures and development of vaccines adapted to virus variants is important to affected individuals.

A total of 3,959 patients who are or have been treated for cancer at University Hospital Vienna and at the Franz Tappeiner Hospital in Merano (Italy) were examined in the study. Eighty-five percent of patients had received at least one vaccination with one of the SARS-CoV-2 vaccines authorized in the EU. Between February 2020 and February 2022, a total of 950 of the 3,959 cancer patients (24 percent) had become infected with the SARS-CoV-2 virus. As the research shows, the number of breakthrough infections increased significantly with the emergence of the omicron variant in January 2022: 70 percent of infected patients were vaccinated. Thus, the risk of vaccine breakthrough for cancer patients due to omicron tripled compared with the delta variant that prevailed between October and December. Breakthrough infections were significantly more common among those who were undergoing systemic treatment than among those without ongoing cancer therapy.

To obtain reasons for the higher rate of breakthrough infections with omicron compared to delta, the researchers examined, among other things, the concentration of protective antibodies in the blood in samples from 78 cancer patients and 25 healthy individuals. Strikingly, both in people with solid tumors and blood cancers, there was greatly reduced inhibition of the omicron variant by specific vaccine antibodies as compared to people without cancer. However, there was also a trend toward shorter hospital stays for vaccinated versus unvaccinated patients. In addition, breakthrough infections only required intensive medical care in rare cases.

Matthias Preusser, head of the Division of Oncology at the Department of Medicine I at MedUni Vienna and University Hospital Vienna, says, "The increasing rates of breakthrough infections and hospitalizations of vaccinated cancer patients associated with omicron underscore the need for further protective measures not only to effectively combat the ongoing pandemic, but also to prepare for the potential emergence of additional SARS-CoV-2 variants. Vaccines adapted to the particular SARS-CoV-2 variant could help to better protect cancer patients and maintain life-sustaining cancer treatment during the pandemic."

More information: Maximilian J. Mair et al, Enhanced SARS-CoV-2 breakthrough infections in patients with hematologic and solid cancers due to Omicron, *Cancer Cell* (2022). DOI: 10.1016/j.ccell.2022.04.003

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