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Background: Data is lacking about SARS-CoV-2 vaccination effectiveness in patients with cancer, particularly those on systemic therapy. This retrospective cohort study in the US national Veterans Affairs (VA) healthcare system reports the effectiveness of SARS-CoV-2 vaccination in cancer patients on and off active therapy during the first 140 days following administration.

Methods: This is a multicenter study of SARS-CoV-2 infection among vaccinated and unvaccinated Veterans vaccinated during the period from 12/15/2020 to 5/4/2021. Veterans with solid or hematologic malignancy who received systemic cancer-directed therapy were included. The study period and one time between 12/15/2020 to 5/4/2021 were included. Vaccinated patients were exactly matched 1:1 to unvaccinated control on race, VA facility, rurality of home address, cancer type, and treatment timing and modality with minimum distance matching on age. The primary exposure was receipt of a SARS-CoV-2 vaccine in the primary outcome was laboratory-confirmed SARS-CoV-2 infection. Vaccination effectiveness was defined as 1 minus the risk ratio of SARS-CoV-2 infection for vaccinated individuals compared to unvaccinated controls.

Results: 184,485 patients met eligibility criteria and 113,796 were vaccinated during the study period. Of these, 29,152 vaccinated patients were matched 1:1 to 29,152 unvaccinated controls. The 29,152 vaccinated patients included a median of 47 days of follow-up, overall vaccine effectiveness in the matched cohort was 58% (95% CI, 39 to 72%) starting 14 days after the second dose. Patients on chemotherapy within three months prior to first vaccination dose exhibited a 14-day post-second dose effectiveness of 57% (95% CI -23 to 90%), versus 76% (95% CI 50 to 91%) for those on end of active therapy with a median 47 days of follow-up for those off system therapy for at least six months.

Conclusions: Vaccination is an effective strategy for preventing COVID-19 in cancer patients. However, effectiveness may be reduced in patients actively receiving immunosuppressive systemic therapy. Future study is needed to determine if these patients would benefit from post-vaccination serologies and/or a booster vaccination following completion of therapy.

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