14. **SAFETY AND IMMUNOGENICITY OF COVID-19 VACCINES IN PATIENTS WITH CANCER: A NETWORK META-ANALYSIS OF 11357 PATIENTS.**

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https://www.youtube.com/watch?v=0JIMP5FyI7s&t=13283s

INTRODUCTION: The COVID-19 pandemic has had a devastating impact worldwide, especially among patients with cancer as they are more likely to experience severe infection and worse outcomes than the general population. Cancer patients have been excluded from the confirmatory clinical trials which create a gap in the clinical data addressing the effectiveness and safety of the vaccines in this group of immunocompromised patients. Therefore, this study aims to evaluate the findings of all relevant individual studies about the serological response to COVID-19 vaccines in cancer patients compared with healthy participants. **METHODS:** We searched for published relevant studies in the following electronic databases: PubMed, Scopus, Cochrane Library, and Web of Science from inception until 1st August 2022. Data were extracted from eligible studies and pooled as a risk ratio or mean difference (MD) in the network meta-analysis model with the corresponding 95% confidence interval. We used the random effect model in case of significant heterogeneity, otherwise, a fixed-effect model was used. We analyzed the data using R version 4 for windows. **RESULTS:** We included 42 studies (3 randomized controlled trials and 39 observational) with a total of 11357 patients in this network meta-analysis. The pooled effect estimates showed that healthy participants were better than cancer patients with solid and hematological tumors in seroconversion [(RR = 0.81; 95% CI 0.75, 0.87; P < 0.00001)), (RR = 0.61; 95% CI 0.54, 0.69; P < 0.00001); respectively]. However, the pooled effect estimates showed that there was no difference between healthy participants and Cancer patients with solid tumors in terms of COVID-19 antibody titer, T-cell response, and adverse events (MD = -160.82; 95% CI -3089.28, 2768.18; P = 0.91), (RR = 1.10; 95% CI 0.69,1.75; P = 0.69), (RR = 1.06; 95% CI 0.88,1.27; P= 0.54), respectively. Additionally, there was no significant difference between the different types of vaccines in terms of COVID-19 antibody titer. **CONCLUSION**: In conclusion, the current evidence demonstrated that the seroconversion rate in healthy participants was higher than in patients with solid and hematological cancers. Nevertheless, our network meta-analysis revealed no significant difference between the two groups in terms of COVID-19 antibody titer, T-cell response, and adverse events. Accordingly, the present evidence is not sufficient to confirm the safety and efficacy of COVID-19 vaccine among cancer patients. Therefore, further studies are recommended.

Key words: COVID-19; Cancer; Vaccine; Network meta-analysis.