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Efficacy and toxicity of BNT162b2 vaccine in cancer patients

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Background

Efficacy and safety profile of COVID-19 vaccines had been acquired from phase III studies. Nevertheless, cancer patients were not represented in these trials. In 1/2021 mass vaccination of high-risk population, including cancer patients, was initiated in Israel. We aimed to prospectively evaluate efficacy, immunogenicity and safety of BNT162b2 vaccine in cancer patients.

Methods

Cancer patients on active treatment were prospectively enrolled following first dose of BNT162b2 or after a second dose. Serum was collected after each dose and additionally in case of seronegativity. An age-matched cohort of healthcare workers served as controls. Questionnaires regarding sociodemographics and adverse reactions were employed at serum collection. FDA-approved assay was used to assess IgG at all time-points. Patients' electronic medical records were reviewed for documentation of COVID-19 infection, blood counts, liver enzymes and imaging studies.

Results

The study included 232 cancer patients and 261 controls. Following first dose 29% of patients were seropositive compared with 84% of controls ($p<0.001$). Following second dose seropositive rate reached 86%. Rate per 1000-person days after first dose were 12.5 for patients and 48.5 for controls. Chemotherapy reduced immunogenicity (OR 0.41 (95%CI 0.17-0.98). In seronegative patients, rate of documented leukopenia reached 39%. No COVID19 cases were documented throughout the study period except two cases following the first dose. Reported adverse events resembled former published studies.

Conclusions

Our results indicate the BNT162b2 appear to be safe and effective in cancer patients. There is a pronounced lag in antibody production compared with non-cancer controls, however seroconversion occurred in most patients after the second dose. Future real-world data is warranted to determine the long-term efficacy of the vaccine with regard to type of anti-cancer treatment.

Legal entity responsible for the study

The authors.

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Disclosure

All authors have declared no conflicts of interest.