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COVID-19 infections in patients with cancer from a prospective observational study of COVID-19 vaccine response

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Background

COVID-19 disease is more severe in unvaccinated cancer patients compared with the general population. There is limited data regarding clinical outcome of vaccination in this patient group.

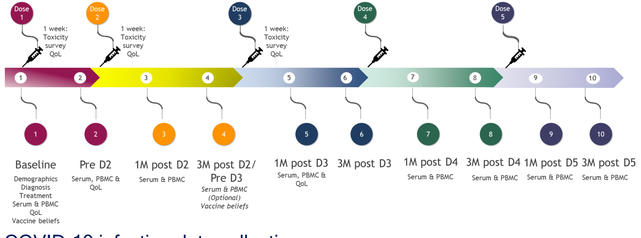
Methods

SerOzNET (ACTRN12621001004853) is a prospective observational cohort study of adults and children with haematological or solid cancer receiving COVID-19 vaccination. The primary endpoint is serological response. An important secondary endpoint is outcome of COVID-19 infection after vaccination.

Ethics approval for the study was provided by the Monash Health Human Research Ethics Committee (project RES 21-337A). Local governance approval was obtained by individual participating sites in accordance with fully executed collaborative research agreements. All participants provided written consent.

Study Design

Patients are enrolled prior to their initial COVID-19 vaccination and attend serial follow-up visits for blood tests and clinical data collection until 6 months after their 2nd dose, or 3 months after completion of their final vaccination dose (whichever is later).



COVID-19 infection data collection

Diagnosis:
Patient reported. Each study visit, patients are asked whether they have been diagnosed with COVID-19 since the previous study visit.

Clinical features, treatment and outcome of infection:
Clinician reported. Investigators review the patient file to determine hospitalisation and treatment received.

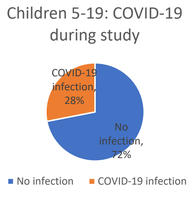
Conclusions

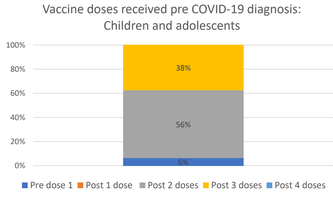
Although recommended to take additional precautions, patients with cancer are highly likely to be exposed to COVID-19 and infection rates are similar to those in the wider population.

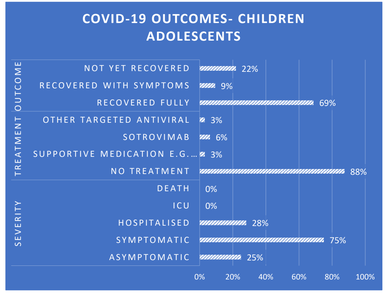
Vaccination prevents ICU admission. However, 9% of adults and 25% of children with cancer required hospitalisation for COVID-19 infection, demonstrating increased severity of symptoms in this group compared with the general population.

Children had higher rates of infection and hospitalisation than adults, which may have been contributed to by lower rates of 3rd dose receipt at time of infection.

Results- Children and Adolescents



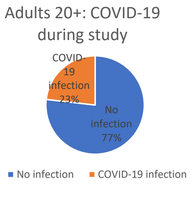


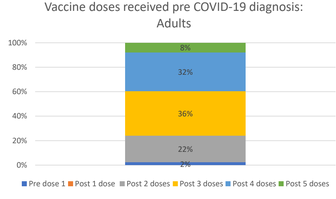


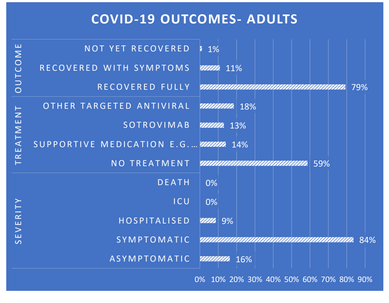
Of 114 children and adolescents (5-19 years), 32 (28%) had infections reported. 94% had received at least 2 doses prior to infection, and 38% 3 or more doses.

24 (75%) had symptoms, 9 (28%) required hospitalisation (4/14, 28% of infected solid cancer patients, 5/18, 28% of infected haem cancer patients), 0 required ICU. 1 patient had a second reported COVID-19 infection 2 months after the initial infection (mild symptoms only). The majority of infections occurred between January - April 2022 (26, 81%). Mean duration on study was 331 days.

Results- Adults







Of 397 adults (20 years +), 92 (23%) had infections reported. 98% had at least 2 doses prior to infection, and 76% had 3 or more doses.

77 (84%) had symptoms, 7 (9%) required hospitalisation (2/50, 4% of infected solid cancer patients, 5/42, 12% of infected haem cancer patients (p=0.24)) , 0 required ICU. No adults had multiple infections reported.

The majority of infections occurred between January- June 2022 (70, 76%). Mean duration on study was 366 days.

Discussion

We demonstrate excellent protection from COVID-19 related morbidity in vaccinated patients with cancer.

Limitations

- Follow up was limited to 6 months post 2nd dose or 3 months post final dose (whichever was later). Therefore, we were unable to determine the effect of potential waning of antibody titre > 3 months post vaccination.
- Patient-reported COVID-19 infection: may result in underestimation of diagnoses and thus overestimate proportion of symptomatic or severe infections.

Future directions

- Serum samples have been collected and will be tested for nucleocapsid antibody (blood marker of natural infection) at baseline and again at the final study timepoint to elucidate asymptomatic infections missed by patient/ clinician report
- Antibody titre and T cell response will be correlated with clinical outcome of infection
- Further research is required into long term outcomes to determine duration of protection afforded against severe illness.

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