Treatment Outcomes and Antibody Immunity to SARS-CoV-2 in Patients with Hematological Malignancies

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CHRONOS19 (NCT04422470) is an observational study in adult patients (pts) ≥18 years, with hematological (hem) diseases (malignant or non-malignant) and COVID-19 in Russia. This web-based registry collected deidentified data from 15 centers all over the country at 30, 90, and 180 days after lab-confirmed or suspected (based on CT and/or clinical symptoms) COVID-19 diagnosis.

The primary endpoint was **30-day all-cause mortality**. The secondary endpoints included rates of COVID-19 complications, ICU admission, mechanical ventilation / O_2 requirement, relapse or progression of hem disease; overall survival, and risk factors for the severity and lethality of COVID-19.

Results

As of data cut-off on April 14, 2021, 626 pts were enrolled in the study; 562 were eligible for primary endpoint assessment. Thirty-day all-cause mortality in pts with hem malignancies was **19%**; 83% of deaths were due to COVID-19 complications. No increase of hem disease relapse rate after COVID-19 was observed at Day 90 or Day 180, although 180-day data was still not mature at the time of analysis.

Tab. 1. Patient Disposition

| Age, median [range]	56 [18-90] years
Males/Females, n (%)	**271** (48%) / **291** (52%)
Malignant disease, n (%)	**516** (92%)
Induction phase / relapse or refractory / remission / NA, n (%)	**180** (35%) / **120** (23%) / **187** (36%) / **29** (6%)

Fig. 1. Overall Survival by Hem Disease
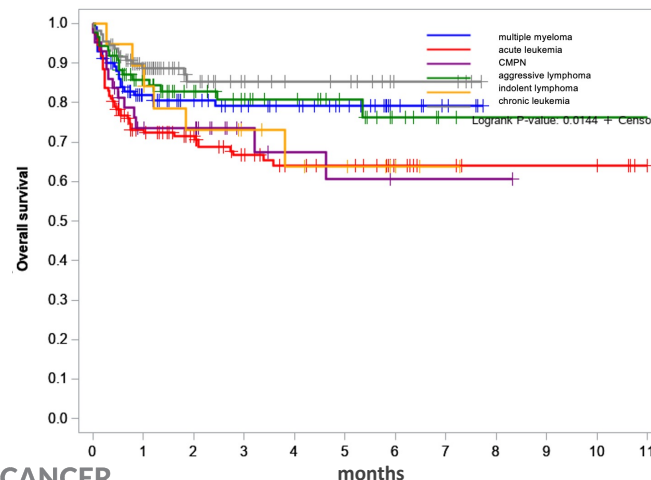
Antibody Immunity

IgG to SARS-CoV-2 was detected in 84% of pts with hem malignancies (167/199) which was comparable with 83% in pts with non-malignant hem diseases (n=36). The highest rate of detected antibody immunity was found in pts with chronic myeloproliferative neoplasms (CMPN), Hodgkin lymphoma (HL), and multiple myeloma; the lowest – in pts with chronic lymphocytic leukemia and non-Hodgkin lymphoma (Fig. 2). IgG detection rate in CD20+ lymphoma (60%) was significantly lower than in HL or T-cell lymphoma (p=0.004).

Fig. 2. Antibody Immunity to SARS-CoV-2 by Hematological Disease and ECOG Status
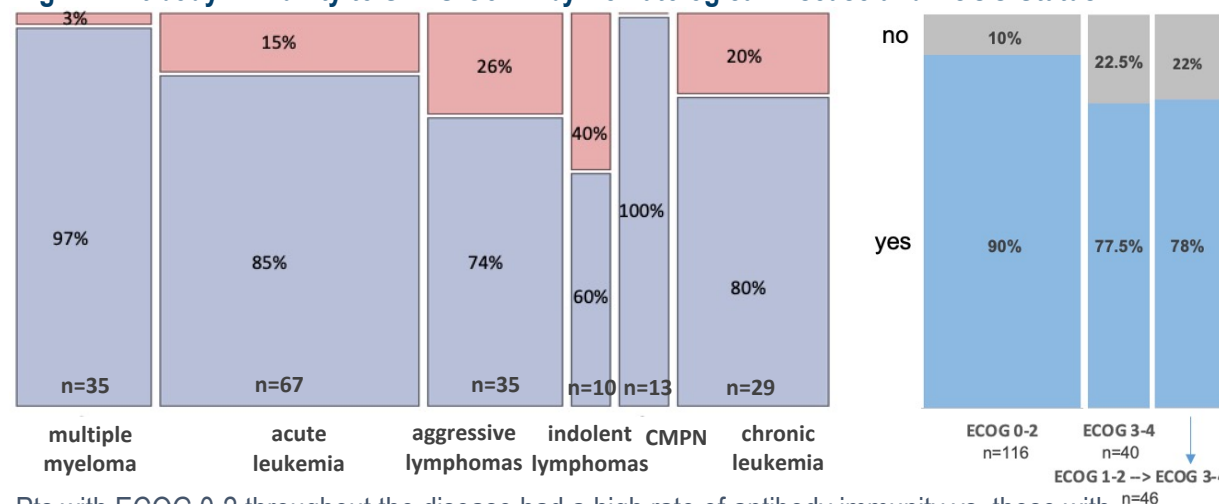
Pts with ECOG 0-2 throughout the disease had a high rate of antibody immunity vs. those with ECOG 3-4 at the time of COVID-19 diagnosis or with worsening of ECOG to 3-4 during the disease (Fig. 2). Five cases of SARS-CoV-2 re-infection were described.

Conclusions

Pts with hem malignancies and COVID-19 have higher mortality than the general population infected with SARS-CoV-2. Low post-disease antibody immunity to SARS-CoV-2 and cases of re-infection may justify vaccination of these pts and warrant further research.