Factors associated with SARS-CoV-2 infection and outcome in patients with solid tumors or hematological malignancies: a single-center study

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Abstract

Key words: SARS-CoV-2, COVID-19, solid tumor, hematological malignancies.

Background: Immunocompromised cancer patients are presumed to be at high risk of developing COVID-19 infection. Predisposing factors to contracting COVID-19 and to severe outcomes have been described in registries but were not compared between solid tumors and hematological malignancies.

Method: This retrospective single oncologic center study included adults with solid tumors or hematological malignancies referred to testing by naso-pharyngeal swab for a SARS-CoV-2 RT-PCR from March 10 to May 18, 2020. We collected data on demographics, symptoms, comorbidities, performance status, type and stage of cancer, anti-cancer treatment, blood work, imaging and outcome.

Results: 212 patients were included in the study. 45 (21%) were tested positive with SARS-CoV-2. The univariate analysis with positive SARS-CoV-2 PCR as a dependent variable reveals significant Odds Ratios (ORs) for age - with a mean of 62.5 years - (OR: 1.05, 95% CI: 1.02-1.08), performance status $\geq$2 (OR: 2.38, 95% CI: 1.22-4.70), inpatient status (OR: 2.36, 95% CI: 1.11-4.91) and hematological malignancies (OR: 2.48, 95% CI: 1.23-4.96). In contrast, OR for solid tumors reveals a negative association (OR: 0.40, 95% CI: 0.20-0.81). When integrating severe outcome (ICU admission or COVID-19 related death) as a dependent variable, the univariate logistic regression model shows significant ORs for pre-existing lymphopenia (OR: 4.0, 95% CI: 1.17-15.04), hematological malignancies (OR: 3.73, 95% CI: 1.09-13.80), and a negative association for solid tumors (OR: 0.27; 95% CI: 0.07-0.92).

Conclusion: In patients referred for SARS-CoV-2 testing, hematological malignancies were associated with a higher risk of COVID-19 infection and severe outcomes. Other factors were age, active chemotherapy treatment and inpatient status.

Figure 1: Univariate analysis for positive SARS-CoV-2 RT-PCR

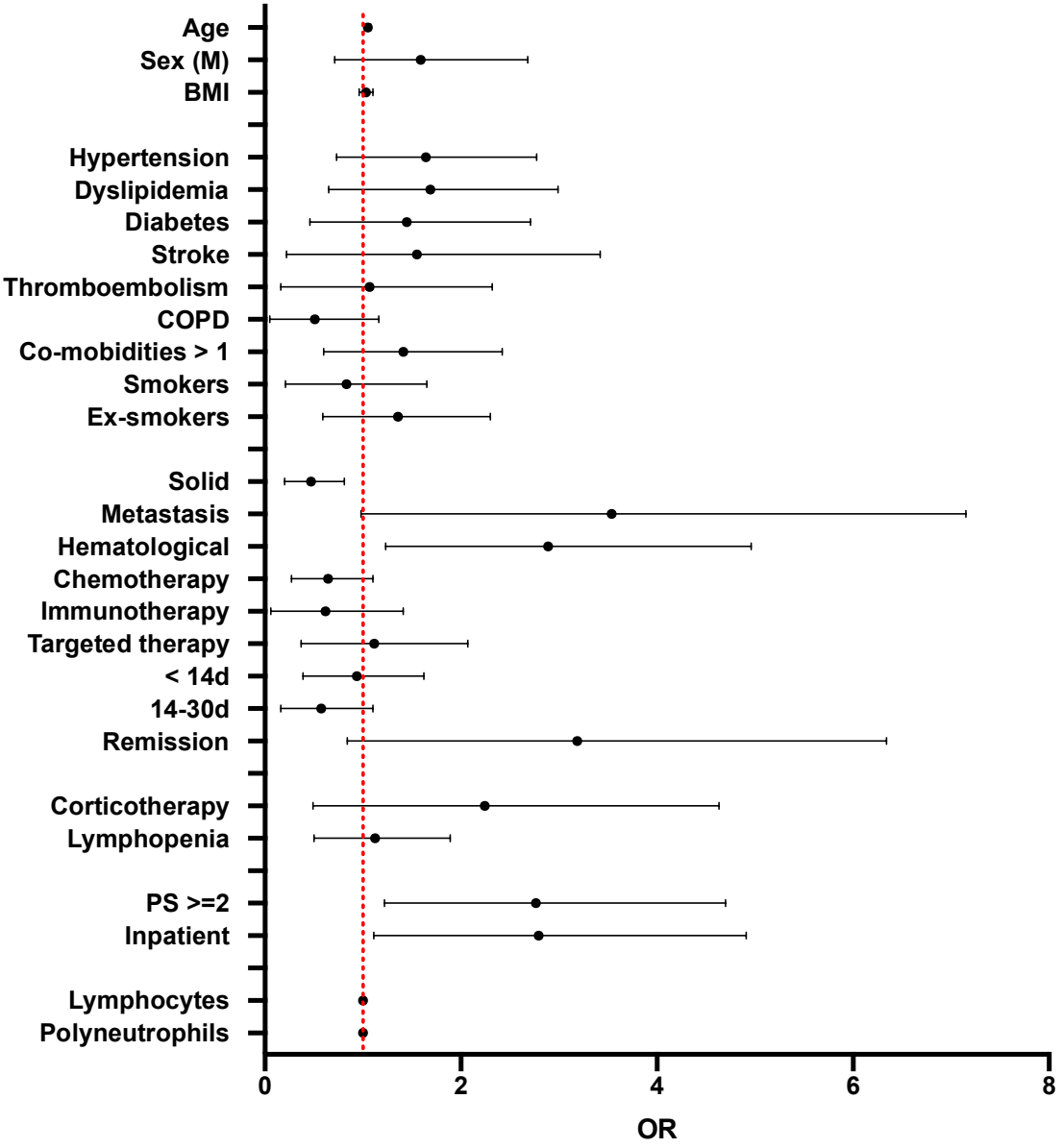

Figure 2: Univariate analysis for severe outcome