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Prospective Multicentric Observational Study of COVID19 in Oncohematological Patients in the Catalonia Region: The Opposite Effect of Steroids on Survival

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Introduction

Coronavirus Disease 2019 (COVID19) has shown higher mortality in patients with comorbidities, including cancer. First reports from China, Italy, and US showed mortality comprised between 20% and 40% in this specific population. However, the number of patients in these studies was limited and the percentage of hematological patients was underrepresented. In our study, we present a prospective evaluation of patients affected by solid and liquid tumors who were affected by COVID19 from the same geographical area and time period. Survival outcomes, prognostic risk factors, and effects of oncological treatments received were analyzed.

Methods

We included all consecutive oncological patients with age > 18 years old affected by COVID19 (confirmed by pharyngeal PCR test) who were hospitalized in 5 tertiary oncological referral centers in the Catalonia region were included in the study. The recruitment period started from 13/03/2020 to 24/04/2020.

Two-hundred thirty-one patients were recruited. Thirty-three percent had hematological malignancies and 67% had solid tumors. The median age was 65 years (range 58-75 years). Female patients were 41%. Twenty-six percent of patients were not considered candidates to intensive care treatments (tracheal intubation) due to their advanced oncological status. Of the hematological cohort, lymphoid malignancies represented 36% of the population, multiple myeloma 20%; acute leukemias 15%; chronic lymphoproliferative diseases 12% and other malignancies 17%. At the time of infection, 11% of patients were receiving steroids (more than 0.5mg/kg/24 hours >15 days), 4% were on active immunosuppressive therapy (calcineurin inhibitors, sirolimus or mycophenolate mofetil) and 5% had grade >3 neutropenia. Most importantly, 61% were on active oncological treatment, 18% were on follow-up, 10% had been diagnosed without having received any treatment.

Results

At COVID19 diagnosis, 75% of patients had a fraction of inspired oxygen (FiO2) < 24% and 63% had fever. Only 16% had cough, 16% had mucous secretion and 12% had dyspnea. All the other symptoms (myalgia, diarrhea, anosmia, ageusia, fatigue, headache) had an incidence < 10%. Chest X-ray was abnormal in 60% of cases. Regarding in-hospital treatments, 85% received antibiotics, 76%
hydroxychloroquine, 12% tocilizumab, 30% corticoids, 70% prophylactic anticoagulation and 55% oxygen support.

The median duration of hospitalization was 9.00 days (range 5-16 days).

The overall mortality rate was 26% with a non-significant difference between hematological (32%) and oncological (23%) patients (p-value = 0.23, figure 1). A significant difference was observed between patients who were candidates to intensive care treatments (21.5%) and not candidates (42.6%)(p-value = 0.0038, figure 1).

The following risk factors were associated with decreased survival on multivariate analysis: having the oncological disease in progression (HR 3.33, 95%Confidence Interval (CI)= 1.73-6-41, p<0.001); use of steroids (>0.5mg/kg/24 hours) in the last 15 days (HR 3.76; 95%CI=1.69-8.40, p<0.001); age (continuous variable, HR 1.05, 95%CI= 1.01-1-08, p=0.005); grade 4 neutropenia. When considering COVID19 in-hospital treatments, only steroids were associated with a protective effect on survival (HR 0.51, 95%CI=0.27-0.94, p=0.032) while hydroxychloroquine and tocilizumab had no significant effect.

Severe respiratory insufficiency (defined as use of >50% FiO2 as oxygen support) was present or developed in 46% of patients. On multivariate analysis, the following factors were associated with a higher risk of developing severe respiratory insufficiency: use of steroids (>0.5mg/kg/24 hours) in the last 15 days (HR 2.36; 95%CI=1.12-4.97, p=0.023); age (HR 1.05, 95%CI= 1.01-1-08, p=0.009) and dyspnea at diagnosis (HR 3.95; 95%CI=1.77-8.78, p=0.001).

**Conclusion**

COVID19 is associated to increased mortality in patients affected by solid and liquid tumors. Being a candidate for intensive care treatments could improve survival while having progressive disease, older age and grade >3 neutropenia were considered negative factors. Interestingly, the use of steroids
was associated to reduced survival if received within 15 days before COVID19 diagnosis, while it has protective effect when used as part of COVID19 therapy.

Figure 1. Survival curves of the study cohorts between hematological and oncological patients (A) and candidates versus not candidates to intensive care treatments (B).
Disclosures
Mussetti: Novartis, Gilead: Honoraria, Research Funding. Sureda Balari: Gilead/Kite: Consultancy, Honoraria; Celgene: Consultancy, Honoraria; BMS: Speakers Bureau; Roche: Honoraria; Sanofi: Consultancy, Honoraria; Merck Sharpe and Dohme: Consultancy, Honoraria, Speakers Bureau; Janssen: Consultancy, Honoraria; Novartis: Consultancy, Honoraria; Celgene/Bristol-Myers Squibb: Consultancy, Honoraria; Takeda: Consultancy, Honoraria, Speakers Bureau; Incyte: Consultancy.

OffLabel Disclosure:
Tocilizumab for COVID19

Author notes
* Asterisk with author names denotes non-ASH members.

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