COVID-19 cancer patients and thromboembolic disease: survival analysis

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Background

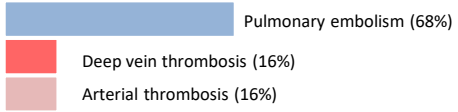
COVID-19 infection is associated with an increased risk of thromboembolic events (TE). However, there is limited information about thrombotis risk in COVID-19 cancer patients.

Methods

Cancer patients who were diagnosed of COVID-19 infection in our institution during the first pandemic wave were evaluated (N=219).
The study population was monitored for 12 months, and TE were recorded. A descriptive analysis of baseline and follow-up clinical characteristics was performed.
Potential prognostic factors for developing TE and overall survival (OS) were analysed using logistic and cox proportional regression models.

Results

- Overall TE rate was **13%.**
- **Median time** from COVID-19 diagnosis **to TE** was **12 weeks** (w)
- **TE** were reported **during** COVID-19 **hospitalization (52%)** and during **follow-up (48%).**
- Reported TE included:



Overall survival analysis

- Pooled **mortality rate** among patients with **TE** was **52%**, and **41%** among patients **without TE**. No differences in OS were found between patients who developed TE and those who did not. Nevertheless, hospitalization for COVID-19 infection, time of TE diagnosis (dx) and location of thrombus, had an impact on OS:
  - Figure 1. **Being hospitalized for COVID-19 infection** was a prognostic factor for **worse survival** (p=0.03).
  - Figure 2. Diagnosis of **TE during COVID-19 hospitalization conferred poorer survival** compared to those patients whose TE was established during follow up (p=0.02).
  - **Arterial thrombosis** that led to a **major ischemic event** (ischemic stroke, limb ischemia, bowel ischemia) resulted in **worse survival outcomes** (1 vs 37 w, p=0.01).

Only **acute respiratory distress syndrome, metastatic disease** and **history of TE before COVID-19 diagnosis** remained significant predictors for **poorer survival** after multivariate analysis; **good performance status** and **thromboprophylaxis** during COVID-19 hospitalization were predictive factors for **better survival outcomes**. No major bleeding was reported.

Risk factors for TE:

- Univariate analysis revealed haemoglobin <10g/dL, D-dimer >3000 ng/mL, PCR >5 ng/mL, LDH >190 UI/L and ferritin > 296 ng/mL during follow-up as significant prognostic factors for TE.
- Only ferritin > 296 ng/mL remained significant after multivariate analysis.
- Neither being on any specific oncological treatment nor prior anticoagulant therapy influenced TE risk.

Figure 1.

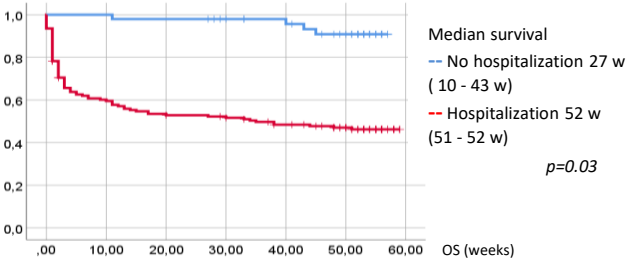
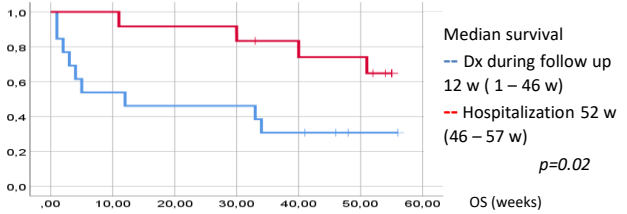


Figure 2.



Conclusions

COVID-19 cancer patients should be **monitored** even after acute infection, as **thrombotic risk may persist weeks after initial COVID-19 diagnosis**, and when established, TE can lead to fatal outcomes. Larger studies are needed for developing a risk prediction tool for TE in COVID-19 cancer patients.

Disclosure and contact information

There are no conflicts of interest to declare

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