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Venous thromboembolism secondary to hospitalization for COVID-19: patient management and long-term outcomes

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START 2 Registry VTE study group

Background

- Several studies have reported a high incidence of venous thromboembolic (VTE) events in patients hospitalized because of COVID-19.

- The increased risk of thromboembolic complications is attributed to SARS-CoV-2–related pulmonary endothelial dysfunction and systemic activation of coagulation as a result of a thrombo-inflammatory process.

- However, little evidence is available on the long-term clinical history of COVID-19–associated VTE, in particular on the risk of recurrence after treatment is discontinued and, therefore, the optimal duration of anticoagulant treatment remains uncertain.

AIM of the study

- To compare baseline characteristics, management strategies, and long-term clinical outcomes between patients with COVID-19–associated VTE and patients with VTE secondary to hospitalization for acute medical illness without COVID-19.

Methods

- Multicenter observational study, the START-COVID VTE.

- Patients with COVID-19–associated VTE diagnosed between June 2020 and December 2021, and followed up for a minimum of 12 months after treatment discontinuation, were included (prospective cohort) .

- Using the database of an ongoing registry, the START2-Register, patients without COVID-19, who developed VTE secondary to hospitalization before February 2020, and had a minimum follow-up of 12 months after treatment discontinuation were selected (control cohort).

Study outcomes

- The primary end points of the study included the occurrence of symptomatic venous or arterial thrombotic events during follow-up, both on treatment and after treatment discontinuation; overall mortality; and major bleeding during anticoagulant treatment.

- Secondary end points included the occurrence of the individual components of the primary end point, DVT at any site, PE, acute myocardial infarction, acute ischemic stroke, and acute peripheral artery disease, as well as clinically relevant nonmajor bleeding.

Results (I)

- Prospective cohort: 278 patients.

- Control cohort : 300 patients.

- Patients with VTE secondary to COVID-19 had more frequent pulmonary embolism without deep vein thrombosis than controls (83.1% vs 46.2%, P <0.001), lower prevalence of chronic inflammatory disease (1.4% and 16.3%, P <0.001), and history of VTE (5.0% and 19.0%, P <0.001).

- During the acute phase treatment, significantly more patients with COVID-19–associated VTE received parenteral anticoagulant treatment than controls (86.3% and 42.6%, P <0.001); LMWH was the most frequently prescribed drug.

Results (II)

- Following the acute phase treatment, DOACs were more frequently prescribed to patients with COVID-19 than to controls (89.2% and 77.7%, P =0.03).

- The median duration of anticoagulant treatment (194 and 225 days, P = 0.9) and the proportion of patients who discontinued anticoagulation (78.0% and 75.0%, P = 0.4) were similar between the 2 groups.

- While on treatment, a total of 9 thrombotic events and 6 major bleeding events occurred, with no difference between patients with COVID-19–associated VTE and controls.

- Mortality rates were similar between the 2 groups.

Results (III)

- The proportion of patients who discontinued anticoagulation was similar between the 2 groups (78.0% and 75.0%, respectively); the duration of follow-up after discontinuation of anticoagulant treatment was similar between the 2 groups.

- Thrombotic event rates after discontinuation were 1.5 and 2.6 per 100 patient-years, respectively (P = 0.4), without significant differences.
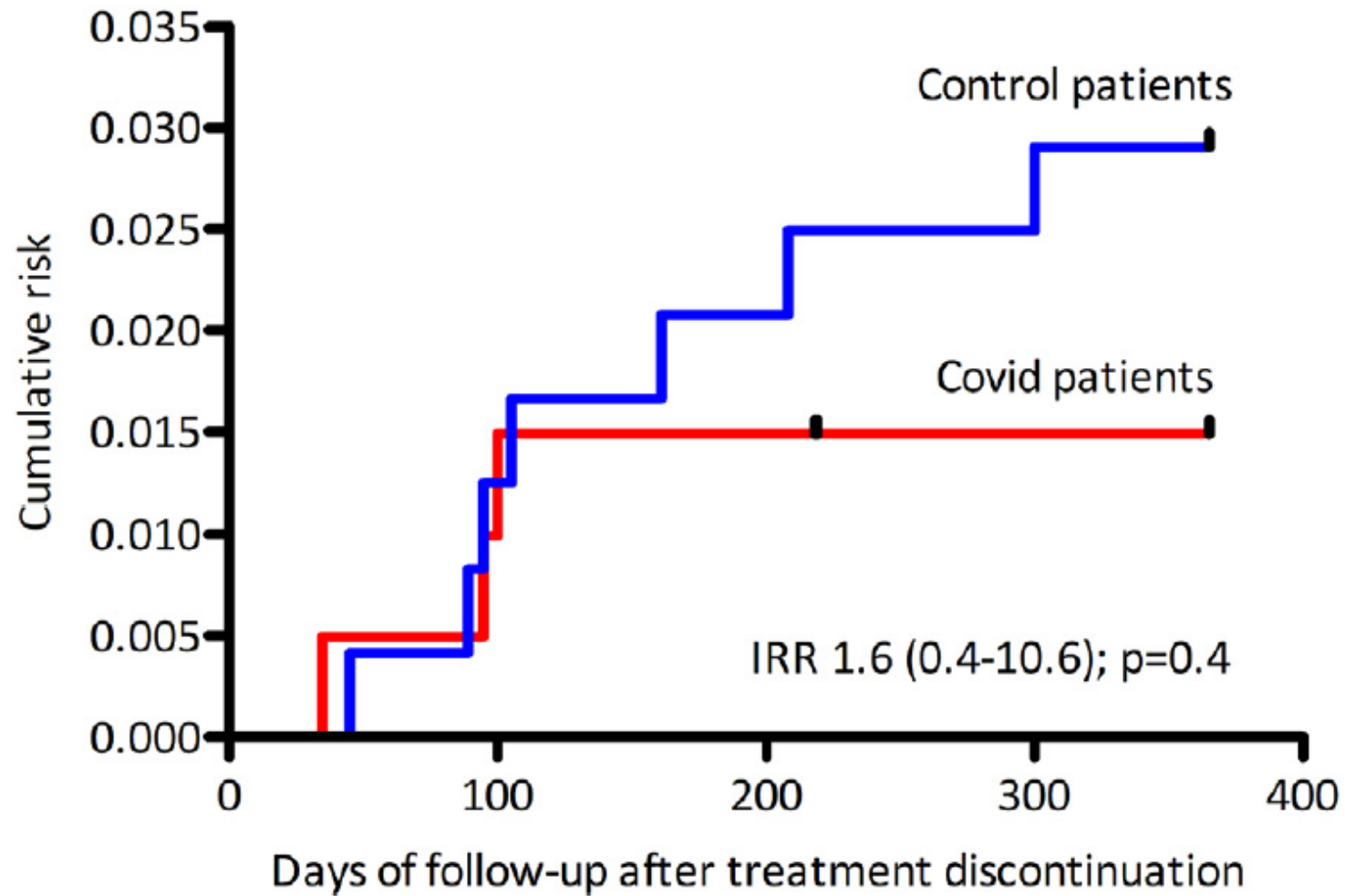
FIGURE Kaplan-Meier curves for cumulative thrombotic event rates after treatment discontinuation in patients with COVID-19 and controls. IRR, incidence rate ratio.

Conclusions

- In conclusion, the risk of recurrent thrombotic events in patients with COVID-19–associated VTE is low and similar to the risk observed in patients with VTE secondary to hospitalization for other medical diseases.

- There is currently no guidance in the literature on the duration of secondary prevention of VTE with anticoagulant drugs in patients who developed VTE during hospitalization for COVID-19, and uncertainty exists on the optimal duration of treatment in these patients.

- In this study, the low event rates after treatment discontinuation found in COVID-19 patients, support the use of a definite duration of anticoagulation (ie, 3-6 months) also in this setting, as it is currently recommended for all patients with VTE secondary to a transient risk factor, including hospitalization for an acute medical illness .