



COVID-19: Clinical course, mortality risk factors and thromboembolic events



Background¹

- **Coronavirus (SARS-CoV-2) cases:** 1'900'000 (April 14, 2020)
- **Active cases:** 1'400'000 / **Serious cases:** 50'000
- **Deaths:** 120'000

This one-pager analyzes the clinical course, mortality risk factors and thromboembolic events in COVID-19 patients.



Study 1 Zhou and colleagues²

Background

- **Study aim:** To assess risk factors for mortality and a detailed clinical course of illness in COVID-19 patients.
- **Patients:** 191 patients with COVID-19; 137 discharged, 54 died.
- **SARS-CoV-2 receptor:** ACE2; expressed (among others) on myocytes and vascular endothelial cells. Hence, cardiac involvement by the virus is theoretically possible.

Results

- **Comorbidities:** Found in 48% of patients (hypertension, 30%; diabetes, 19%; coronary heart disease, 8%).
- **Risk factors for poor prognosis:** (1) Older age; (2) Higher Sequential Organ Failure Assessment (SOFA) score; (3) d-dimer greater than 1 µg/L on admission (d-dimer: an unspecific marker for inflammation and coagulation).
- **COVID-19 complications:** Sepsis, respiratory failure, acute respiratory distress syndrome (ARDS), heart failure, septic shock, secondary infection, ventilator-associated pneumonia.

Conclusion

The potential risk factors of older age, high SOFA score, and d-dimer greater than 1 µg/L could help clinicians to identify patients with poor prognosis at an early stage.

Study 2 Xu and colleagues³

Background

Study aim: To look into the in-hospital risk of venous thromboembolism (VTE) and bleeding risk in COVID-19 patients. Study currently ongoing.

- **Patients:** 138 patients with COVID-19; 15 patients (11%) classified as critically ill, 16.7% at high risk for VTE, 6.5% at risk for bleeding if given VTE prophylaxis (anticoagulants).

Results

- **DVT:** Thrombotic events were identified in 4 patients (3%). All of them were diagnosed as deep vein thrombosis by ultrasound 3-18 days after admission.
- **VTE:** Critically ill patients faced a double high risk of thrombosis than less critically ill patients; 20% of critically ill patients had a VTE despite the use of guideline recommended thromboprophylaxis. VTEs seem to be accompanied by abnormal platelet aggregations in small blood vessels, which is suggested to be due to SARS-CoV-2 binding to and damaging vascular endothelial cells⁴.

Conclusion

The authors concluded that critically ill patients with COVID-19 suffered both a high risk of thrombosis and of bleeding.

However, the prediction risk of VTE and major bleeding was low in non-critically ill patients.



Conclusions

COVID-19 is pushing the healthcare system to its limits and increasing the number of critical hospitalizations.

Although COVID-19 seems to contribute to a **higher frequency of VTEs in critically ill patients**, it must be noted that the typical critically ill **COVID-19 patient is already a high risk VTE patient** per se. This is because the majority of these patients are of older age, are immobile due to bed rest, and have major complications as well as secondary infections.

The international guidelines and recommendations for high risk VTE patients consist in giving a **VTE prophylaxis with anticoag-**

ulants in combination with compression therapy. Compression therapy is especially recommended in patients that are at higher risk for bleeding. More specifically, SIGVARIS GROUP suggests the use of **medical compression stockings for VTE prophylaxis in hospitalized COVID-19 patients.**

Medical staff is performing outstanding work worldwide to care for the growing number of COVID-19 patients, and is put under immense pressure in the fight against SARS-CoV-2. To reduce leg heaviness and pain associated with long hours of standing, our recommendation for healthcare personnel is to wear SIGVARIS GROUP medical compression stockings.

References (1) <https://www.worldometers.info/coronavirus/>. (2) Zhou, Fei, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet*. 2020 Mar 28;395(10229):1054-1062. doi: 10.1016/S0140-6736(20)30566-3. Epub 2020 Mar 11. (3) Xu, Jin-Fu, et al. Risk assessment of venous thromboembolism and bleeding in COVID-19 patients. Under Review at *Respiratory Research* (2020). DOI:10.21203/rs.3.rs-18540/v1. (4) Phend, Crystal. COVID-19: Abnormal Clotting Common in More Severe Disease - Chinese clinicians on the early front lines argue for anticoagulation. Senior Editor MedPage, March 24, 2020.