001542

AntiXa determination as a guide for anticoagulation in COVID-19 patients in our hospital

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Introduction: Many studies are beginning to study the relationship between COVID-19 infected patients and an increased risk of prothrombotics. So far, all clinical guidelines suggest starting prophylactic anticoagulation in this type of patient, but we do not really know what is the optimal dose to avoid bleeding complications and at the same time decrease the risk of thrombosis. We hypothesize that monitoring of the antiXa factor may serve to guide anticoagulant therapy, either at prophylactic or therapeutic doses in patients infected with SARS-CoV-2.
Methods: This is a prospective descriptive study in which we included 11 patients infected with COVID19 admitted to the Intensive Care Unit at a tertiary hospital in southern Spain. Variables such as comorbidity, renal function, BMI, initial and final dose of low molecular weight heparin, and laboratory parameters such as factor VIII coagulant activity, Von Willebrand antigen (VW Ag), ristocetin cofactor Von Willebrand's (VWRCo), antithrombin, fibrinogen, D-dimer were collected, as well as bleeding and thrombotic complications.
The following data were collected for each patient: demographics, previous conditions: comorbidities, obesity, Charlson comorbidity index, clinical characteristics, severity of illness (APACHE II and SOFA score), renal clearance, the need for renal replacement therapy (RRT), and cardiovascular risk factors (hyperlipidemia, hypertension, diabetes, ischemic cardiopathy). In addition, initial enoxaparin dose and subsequent goal dose, renal function, and all anti-factor Xa levels were collected. Major and minor bleeding events, Heparine-Induced Thrombocytopenia (HIT) and thrombotics events rule out by CT, were analysed. All patients received at least standard doses thromboprophylaxis (enoxaparine 40 mgr/24 h).
Results: 54% of our patients needed to increase the dose of enoxaparin to reach levels of AntiXa in the prophylactic range (AntiXa 0.3-0.7 IU/ml). Only 2 were maintained with the same initial dose (enoxaparine 40mgr/24 h and 100 mgr/24 h respectively).We performed computed tomography (CT) to rule out thrombosis, and only one of our patients presented jugular thrombosis. 3 of our patients presented bleeding events that required blood product transfusion.
Conclusion: We found that conventional prophylactic dose might not be enough for prophylactic anticoagulation in patients with severe pneumonia and ARDS COVID-19 in the Intensive Care Unit. Most of the time (54%), we needed increasingly higher doses os enoxaparine (up to 100 mg per day) to range prophylactic dose. The study concludes with the need to determine the AntiXa factor in all patients infected with COVID 19 as a guide for anticoagulant therapy or prophylaxis, probably due to the proinflammatory state. Although the sample of our observation is small, we consider a highly relevant topic that has not yet been reported in patients with COVID-19. The importance of the findings will serve as a basis for studies with a larger sample. To further investigate the significance of these findings, we suggest studying these data in depth in future controlled clinical trails.

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Low incidence of thrombotic events in SARS-CoV-2 mechanically ventilated anticoagulated patients

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Introduction: Early after the beginning of the Covid-19 pandemic, reports of fatal pro-thrombotic complications of the disease led some experts to advocate the use of systemic anticoagulation in critically ill SARS-CoV-2 patients. As a consequence, an institutional algorithm, stratified on severity, was implemented at the Liege University Hospital.
Objectives: The objective of this retrospective study is to highlight the incidence of thromboembolic or hemorrhagic events in critically ill mechanically ventilated patients with SARS-CoV2 who were all treated with systemic anticoagulation, either prophylactic or therapeutic. The primary endpoint was to compare all-cause mortality between the 2 regimens of anticoagulation. The secondary endpoint was to compare the incidence of thrombotic events (deep venous thrombosis, pulmonary embolism, myocardial infarction, mesenteric ischemia, hepatic ischemia, stroke) and hemorrhagic events between the 2 groups of patients.
Methods: Between March 14th and June 1st, 2020, all consecutive patients with SARS-CoV-2 hospitalized in the 7 ICUs at the Liege University Hospital were included in this study. The Institutional Review Board waived the need for consent to use prospectively collected clinical data and the study was appointed the serial number 2020-214.
The exclusion criteria included: the lack of use of mechanical ventilation and of anticoagulation. All patients received either prophylactic (enoxaparin 0.5 mg/kg/day) or therapeutic (enoxaparin 1 mg/kg, twice a day) anticoagulation. All patients were sampled for D-dimers, platelets, Fibrinogen upon admission. Calculation of DIC score (ISTH criteria) and severity scores (SOFA, SAPS2) was acquired upon admission for all patients. Arterial and venous thrombotic events led to a diagnostic workup upon clinical suspicion.
Results: Seventy-three patients were included in the final analyses. Demographic and clinical data are shown in Table 1. Mortality was not different between the 2 groups: 19/49 (38.8%) in the prophylactic group versus 7/24 (29.2%) in the therapeutic group. Moreover, there was no difference in the incidence of thrombotic or hemorrhagic events between the 2 groups. Median platelet counts were normal and DIC was predominantly non-overt. However, fibrin monomers taken from 49% of patients and D-Dimers, which should consolidate DIC scoring, were statistically higher in the prophylactic group in which three thrombotic events occurred (3/73, 4.1%). Of note, the latter incidence is substantially lower than in recent reports thus validating a systemic anticoagulation in Covid-19 patients(1, 2).
Finally, while not conferring a mortality benefit as suggested by a recent study, the therapeutic regimen appeared safe.

Table 1: Demographic, clinical and biological characteristics of anticoagulated SARS-CoV-2 patients (N=73).

All (N= 73)	Therapeutic anticoagulation n=24 (32.9%)	Prophyl actic anticoagulation n=49 (67.1%)	P value
Sex : Male	14 (58.3%)	36 (73.5%)	0.191 *
Age (years)	64 (57 - 67)	64 (56 - 72)	0.402***
Death (N) (%)	7 (29.2%)	19 (38.8%)	0.421 *
Thrombotic events (N) (%)	0 (0%)	3 (6.1%)	0.546**
Hemorragic events (N) (%)	1 (4.17%)	3 (6.1%)	1.00 **
DIC score (ISTH)	2 (2- 3)	2 (2 -3)	0.349 ***
Fibrin Monomer detected (N) (%)	3/13 (23.1%)	15/23 (65.2%)	0.035 **
DDimers (mg/L)	0.93 (0.68 – 1.41)	1.98 (0.95 – 4.55)	0.006 ***
Platelets ($x10^3/mm^3$)	1. (146 - 254)	201 (146 – 271)	0.822 ***

* Chisquare test

** Fisher exact test

*** rank sum test

Age, DIC score, DDimers, platelets median (IQR)

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Conclusion: Taken together, these findings are concordant with previous reports in emphasizing the fact that Covid-19 coagulopathy, while overlapping with many well characterized coagulopathies does not perfectly match any of them(3). They also confirm that systemic anticoagulation is mandatory in critically ill mechanically ventilated patients.

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2. None.

001603

Incidence and mortality of thrombotic complications ICU patients with COVID-19

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Introduction: In COVID-19 patients hyperinflamation, immobilisation, hypoxia and vascular dysfunction may predispose to both venous and arterial thromboembolism. Describing these complications is necessary in order to adjust the intensity of thromboprophylaxis specially in critically ill patients who are at increased thrombotic risk.
Objectives: To identify predictive factors and determine the frequency of thrombotic complications in ICU COVID-19 patients receiving pharmacological thromboprophylaxis.
Methods: Descriptive retrospective study. Statistical analysis was performed with IBMâSPSS Statistics 25.
Results: 77 patients with confirmed COVID-19 hospitalized in the ICU of our second level hospital were screened between March 6, 2020 and May 6, 2020. All patients were adults diagnosed with respiratory failure and undergoing mechanical ventilation. Demographics, comorbidities, severity score,inflammatory markers, medical and antithrombotic treatment were collected. All these data were analyzed between patients with thrombotic episodes and those who did not, establishing the incidence of thrombosis, the type, the diagnosis used, and analyzed the significance of the risk factors.
Of the 77 patients included in the study, 64.9% were male. The average age is 58 ± 11 years. At admission, the mean APACHE II was 17 ± 17.32. 40.3% had a history of HT, 70% chronic lung disease, 67.5% DM, 45.5% DL and 74% obesity, with CKD being present in one of the patients and 7.8% previous thrombotic events. 15.5% were oncologic patients. Regarding anti-thrombotic treatment with LMWH, 55.8% received thromboprophylaxis, 16.9% adjusted the dose to weight/renal function,15.6% received intermediate doses of prophylaxis (1 mg/kg/day) and 10.4% anticoagulant doses. The incidence of venous thromboembolism was 32.5% of the total with DVT being 32% (3 with distal; 2 with distal and proximal; 1 with bilateral; 1 other type) and pulmonar thromboembolism in 76% (6 bilateral; 8 with segmental; 2 with lobar; 3 with massive). Note that, the means of the inflammation parameters were significantly higher in the patients with thrombotic complications compared to those who did not suffer them (D-dimer 63,3 ± 124vs16 ± 21 ng/ml, p = 0,001; Il-6 2311 ± 2767 vs 924 ± 1175, P = 0,001;PCR 246 ± 122 vs 215 ± 117, p = 0,016; Ferritina 6012 ± 2014 vs 1827 ± 1560 ng/ml, p = 0,012;LDH 708 ± 388 vs 1344 ± 1552 ng/ml, p < 0,01). Paradoxically, mortality among thrombosed patients is not significantly higher.
Conclusion: In conclusion, despite systematic thrombosis prophylaxis, the 32,5% incidence of thrombotic complications in these patients is remarkably high and well comparable to the VTE incidence in other patient categories, but mortality mong these patients is not significantly higher. D-dimer, IL-6, Ferritina, LDH and PCR level-guided more aggressive thromboprophylaxis regimens using higher doses of heparin seem to be a good instrument in critically ill patients but more prospective studies are needed in this regard.

001604

Association between ROTEM hypercoagulable profile and outcome in a cohort of severely ill COVID-19 patients under mechanical ventilation

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Introduction: Recently published data show that COVID-19 is characterized by a hypercoagulable ROTEM profile and decreased fibrinolysis[1]. Multiple reports suggest that severe COVID-19 infection is associated with an increased thromboembolic risk[2,3]. There are limited data associating a hypercoagulable ROTEM profile and outcomes in the literature. A hypercoagulable ROTEM profile could help identify patients at risk of worse outcome and help target a study population for enhanced anticoagulation therapy or other COVID-19 therapy.
Objectives: To determine if early hypercoagulability on ROTEM is associated with a higher risk of thromboembolic complications or worse outcome, in a population of mechanically ventilated COVID-19 patients transferred to a tertiary ARDS/ECMO referral center.
Methods: All COVID-19 patients receiving mechanical ventilation at our center between April 3 and June 15, 2020 were assessed with ROTEM. Testing performed included at least ExTEM and FibTEM. Patients were classified as hypercoagulable (HC) or not (nHC) using the