[b] *Departamento de Medicina Interna, Faculdade de Medicina, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG, Brazil*
[c] *Núcleo Interdisciplinar de Investigação em Medicina Intensiva (NIIMI), Belo Horizonte, MG, Brazil*
[d] *Faculdade de Medicina, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG, Brazil*
[e] *Hospital Eduardo de Menezes, Fundação Hospitalar do Estado de Minas Gerais (FHEMIG), Belo Horizonte, MG, Brazil*
[f] *Departamento de Estatística, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG, Brazil*

Aims: The Coronavirus Disease 2019 (COVID-19), that results of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infection, manifests with dysfunction of hemostasis and thrombosis. This study aims to evaluate laboratory parameters of hemostasis in hospitalized individuals with suspected COVID-19. **Methods:** Individuals aged 18 years or older with suspected COVID-19 admitted to two hospitals were invited to participate in this study. The study inclusion period was from April 2020 to March 2021. The study was approved by the institutional ethics committees. The diagnosis of COVID-19 was confirmed by positive SARS-CoV-2 real-time reverse-transcription polymerase chain reaction. Antithrombin, factor V, factor VII, factor XI, factor XII, factor XIII and prothrombin assays were performed using the Multiplex immunoassay technique (ThermoFisher Scientific, Vienna, Austria). Propensity score matching for sex and age were estimated by a logistic regression model for COVID-19 and non-COVID-19 individuals in the R software. The proportions found in each group were compared by Fisher's exact test, when the variable was categorical, and by the Mann-Whitney test, when it was continuous. Linear regression was performed adjusting the levels of clotting factors and antithrombin for the severity score (Sequential Organ Failure Assessment - SOFA). Correlation between SOFA, clotting factors and antithrombin in individuals with COVID-19 were performed by using the Spearman test. Only very strong correlations (≥0.9) were considered; p-value<0.05 was considered statistically significant. **Results:** A total of 151 individuals were included in the study, of whom 138 (91.4%) with the diagnosis of COVID-19 and 13 (8.6%) non-COVID-19. After 2:1 matching, 26 individuals with COVID-19 and 13 non-COVID-19 participated in the study. In the univariate analysis, the group of COVID-19 had higher levels of antithrombin, factor V, factor VII, factor XI and prothrombin compared to the non-COVID-19 group. However, after adjusting for SOFA, only the levels of factor XI and prothrombin remained different between the groups (higher in the COVID-19) (p=0.04 and p=0.04, respectively). We found no association between factor XI and prothrombin with mortality. However, we found a very strong correlation between coagulation factors V and VII (r=0.923, p<0.0001). **Discussion:** Our results show that plasma levels of antithrombin, factor V, factor VII, factor XI and prothrombin were higher in the COVID-19 when compared with non-COVID-19 group of critically-ill patients, but the difference was lost after adjusting the analysis for SOFA. Only the levels of factor XI and prothrombin remained significant in the COVID-19 group after adjustment. This finding suggests that the severity of the disease rather than viral etiology was the main determinant of the difference in the plasma levels of these proteins. We also showed a strong correlation between factor V and VII in our study. Indeed, factor VII is the major trigger of coagulation *in vivo*. Therefore, it is possible that factor V and VII could act together to boost coagulation and promote thrombus formation in patients with COVID-19. **Conclusion:** Our study suggests that increased levels of procoagulant factors in hospitalized critically-ill individuals with suspected COVID-19 are rather related to disease severity than to its cause.

https://doi.org/10.1016/j.htct.2022.09.1173

EXTRACELLULAR VESICLES AS MARKERS OF INFLAMMATION AND HYPERCOAGULABILITY DURING THE FIRST MONTH OF SARS-COV-2 INFECTION IN OUTPATIENTS AND HOSPITALIZED PATIENTS

BG Barion [a], TRF Rocha [b], H Yeh-Li [b], BM Mazetto [c], E Okazaki [b], C Rothschild [b], B Stefanello [b], VG Rocha [b], PR Villaça [b], FA Orsi [b]

[a] *Faculdade de Medicina da USP (FMUSP), São Paulo, SP, Brasil*
[b] *Hospital das Clínicas da Faculdade de Medicina da USP (HCFMUSP), São Paulo, SP, Brasil*
[c] *Universidade de Campinas (UNICAMP), Campinas, SP, Brasil*

Introduction: During SARS-CoV-2 infection, a severe hypercoagulability state is observed due to the stimulus of multiple mechanisms of hemostasis, such as coagulation, activation of platelets, endothelial cells, monocytes and neutrophils and impaired fibrinolysis. As a consequence, thrombotic complications are common in the course of COVID-19. Microvesicles (MVs) are intracellular transmitters that participate in pathological conditions, such as inflammatory and infectious processes, and are capable of triggering prothrombotic mechanisms. Since MVs release is potentially associated with COVID-19-induced coagulopathy, our aim was to identify during the course of the disease when the stimulus for MVs release occurs and whether this was associated with adverse outcomes. **Objective:** We evaluated changes in the levels of MVs markers during the first month of SARS-CoV-2 infection in patients (pts) with severe disease (hospitalized in an Intensive Care Unit – ICU) as compared to outpatients. We also evaluated the association between MVs markers with: inflammatory biomarkers (C-reactive protein, CRP), hypercoagulability (D-dimer) and death. **Methods:** Blood samples were collected on three occasions: before the 10th day of symptoms, in the 3rd week of symptoms and in the 4th week of symptoms for the quantification of the following MVs markers by flow cytometry: CD41A (platelet activation), CD162 (PSGL-1; leukocyte-platelet interaction), CD31 (endothelium-platelet interaction) and CD142 (tissue factor). Statistical tests of ANOVA with repeated measures, Mann-Whitney and regression methods were used. **Results:** The population studied was 85

pts, being 25 from ICU. Mostly were men (51%), with a median age of 41 years. The concentration of MVs expressing CD31+, CD41+, CD162+ and CD142+ were persistently elevated in pts who required ICU compared to outpatients at the 3 moments studied, except for the levels of MVs-CD31+ and MVs-CD142+ that were similar between ICU and outpatients in the 4th week of symptoms. However, despite the differences between the groups, there were no significant changes in the levels of MVs during the course of the disease within the groups. In subgroup analysis, we observed that increases in the levels of MVs-CD162+ and MVs-CD142+ in the 3rd week of symptoms were associated with the risk of death (p=0.02 and p=0.06, respectively). We also observed that during the course of the disease an association between MVs, coagulability and inflammation was evident. In the 3rd week of symptoms, D-dimer levels were correlated with MV-CD31+ (r=0.52, p<0.0001), MV-CD162+ (r=0.35, p=0.001), MV-CD41A+ (r=0.44, p<0.0001) and MV-CD142+ (r=0.47, p<0.0001) and CRP values were correlated with MV-CD31+ (r=0.56, p=<0.0001), MV-CD162+ (r=0.48, p<0.0001), MV-CD41A+ (r= 0.41, p=0.0001), and MV-CD142+ (r=0.56, p<0.0001). By the 4th week of symptoms, both D-dimers and CRP correlations with the above MVs remained unchanged. **Conclusion:** To conclude, MVs that express antigens related to platelet activation, leukocyte-platelet interaction and endothelium-platelet interaction, as well as those related to tissue factor are released during the course of COVID-19 in pts with severe disease. After the 4th week of symptoms, the release of these MVs was associated with signs of inflammation and hypercoagulability. Additionally, MVs that express tissue factor and leukocyte-platelet interaction antigens were particularly high among non-survivors, suggesting that these MVs may serve as markers of the risk of death. Finally, these findings suggest the participation of innate immunity and tissue factor pathways in the prognosis of COVID-19, and point towards a possible role of MVs as biomarkers of disease prognosis.

https://doi.org/10.1016/j.htct.2022.09.1174

VACINA SARSCOV-2 PFIZER/BIONTECH PRECIPITANDO AGUDIZAÇÃO DE TROMBOCITOPENIA IMUNE

ASH Gallotti, ERM Neri, MM Garcia, NN Kloster, ACP Silva, CM Freitas, P Vicari, VLP Figueiredo

Serviço de Hematologia do Hospital do Servidor Público do Estado de São Paulo (IAMSPE), São Paulo, SP, Brasil

Introdução: Trombocitopenia Imune (PTI) é uma doença mediada por auto anticorpos contra glicoproteínas na membrana das plaquetas causando sua destruição, associada à inibição da função dos megacariócitos. A PTI pode ser primária ou secundária a doenças autoimunes, doenças linfoproliferativas, infecção, medicamentos e imunização. Existem descrições de vacinas contra Hepatite B, Influenza e até mesmo contra o coronavírus, desencadeando quadros de trombocitopenia imune. Entretanto, há poucos casos descritos até o momento de agudização da PTI após esta vacinação, bem como não existe contraindicação para seu uso nesta população de pacientes. **Objetivo:** Relatar caso raro de vacina contra SARS-CoV-2 precipitando reagudização da PTI. **Relato de caso:** Mulher de 50 anos com PTI há 28 anos, esplenectomizada há 17 anos por corticodependência. Apesar da esplenectomia, a paciente apresenta quadros esporádicos de reagudização após infecções, sempre controlados satisfatoriamente com uso de corticóide. Recebeu previamente duas doses da vacina da COVID (Coronavac), sendo liberada em consulta de rotina para tomar a 3ª dose da vacina, na ocasião com dosagem de plaquetas de 225 mil/mm^3. Após 4 dias deste exame recebeu a vacina Pfizer, evoluindo no 1° dia com petéquias em membros inferiores e cavidade oral. Três dias após a vacinação procurou atendimento médico, apresentando ao hemograma plaquetas 4.000 mil/mm^3. Paciente foi tratada com pulso de metilprednisolona 1g/dia por 3 dias atingindo plaquetas 216 mil/mm^3 após 4 dias, mantendo-se com plaquetometria normal até o momento, 6 meses após o presente relato. **Discussão:** Assim como outros casos de infecções virais associados à etiologia da trombocitopenia imune, acredita-se que o fenômeno possa ser atribuído tanto pelo mimetismo molecular quanto pela resposta imune gerada. Estudos mostraram que 13,7% dos pacientes com PTI recaíram a doença após a vacina da COVID-19. Entretanto, não existem referências quanto ao tipo de vacina realizada. Todos os casos descritos foram transitórios e com boa resposta à terapia padrão, assim como a paciente deste relato. Devido a isso, a contagem de plaquetas deve ser monitorada antes e após a vacinação, independente do componente vacinal, e até então, não é contra indicada para pacientes portadores de PTI. **Conclusão:** Assim, o presente relato sugere que a vacina propiciou recaída da PTI, visto que a doença estava estável, sem ser observado outro fator desencadeante. Após revisão na literatura, pode ser observado casos semelhantes. Porém, ainda faltam dados para comprovação desta associação, além de estabelecer o melhor esquema vacinal a ser realizado nos portadores de PTI.

https://doi.org/10.1016/j.htct.2022.09.1175

VENOUS THROMBOEMBOLISM IN PATIENTS HOSPITALIZED FOR SARS-COV-2: A SYSTEMATIC REVIEW

EO Carvalho, JRN Perez, GB Ferreira, LLB Magami, LC França, LG Santos, DAR Sá

Escola Superior de Ciências da Saúde (ESCS), Brasilia, DF, Brasil

Introduction: The Coronavirus Disease 2019 (COVID-19), caused by SARS-CoV-2 virus, according to stipulations, claimed about 18,2 million lives until December 31, 2021. The COVID-19 generates a hypercoagulability state. Therefore, the main guidelines recommend thromboprophylaxis in hospitalized COVID-19 patients. However, doubts remain about the use of Low-Molecular-Weight Heparin (LMWH). **Aim:** To analyze the incidence of venous thromboembolism in hospitalized patients with COVID-19 in the regime of thromboprophylaxis with LMWH. **Method:** This systematic