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Clinico-Laboratory Profile and Outcome of COVID-19 in Patients with Chronic Immune Thrombocytopenia

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detection, with evanescent antibodies increasing the risk of delayed hemolytic transfusion reactions (DHTRs) should antigen positive red blood cells be transfused. As care fragmentation at different hospitals amplifies the danger of evanescent antibodies, we undertook this exploratory project to investigate how often patients with SCD sought care outside of our healthcare system (HS).

Study Design/Methods: A list of adult patients who routinely receive care for SCD at our institution was compiled by clinical providers. Number and specificity of RBC alloantibodies, date of the first identification of each alloantibody, and date and results of the last antibody screen performed at our HS were recorded for each patient. Locations where patients sought care outside of our HS were obtained through review of clinical notes, the Care Everywhere feature of our electronic medical record system, and direct patient questioning.

Results/Findings: Forty-nine patients (of 54) had an antibody screen and were included in this cohort. Thirteen of the 49 patients received care solely within our HS. Thirty-six patients (73%) received care outside of our HS, with 16 patients seen at one other hospital and 12 patients seen at 3 or more other hospitals. Of the 36 patients who received care outside of our HS, 21 received care exclusively in our state, 11 received care in 8 other states, and 4 received care outside of the US (including Haiti, Jamaica and Africa). The number of alloantibodies identified by our HS ranged from 0–9. Of the 49 studied patients, 23 never had any alloantibodies identified by our HS. Of the 26 patients with alloantibodies identified by our HS, 18 (69%) had negative antibody screens at the time of this writing, with a total of 28 evanescent antibodies including C, E, K, S, Cw, V, FyA, LeB and hrB.

Conclusion: Patients with chronic illnesses such as SCD seek care at multiple hospitals over their lifespans. Although electronic medical record systems have begun linking clinical data across HS, systems effectively linking blood bank data are lacking. Results of this pilot project reinforce that care fragmentation exists, with RBC antibody evanescence patterns amplifying the transfusion dangers of such care fragmentation. Taken together, these data highlight the need for RBC alloantibody data to be shared between HS to optimize transfusion safety.

P-HC-2 | Clinico-Laboratory Profile and Outcome of COVID-19 in Patients with Chronic Immune Thrombocytopenia

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Background/Case Studies: Thrombocytopenia is a well-described complication of COVID-19, with numerous proposed mechanisms among which is immune thrombocytopenia (ITP). There are limited data on the characteristics and impact of COVID-19 on patients with previously diagnosed ITP.

Study Design/Methods: This is a retrospective review of all chronic ITP patients who were diagnosed with COVID-19 between 03/2020 and 01/2022 at a tertiary-care center. The study was approved by the IRB. Patients with secondary thrombocytopenia, missing data, and unavailable follow up after COVID-19 diagnosis, were excluded. Demographic data, comorbidities, clinico-laboratory findings before and after COVID-19 diagnosis, management of COVID-19 and outcome were collected.

Analyses were performed using SPSS; a p value of <0.05 was considered significant. Results were presented as median plus range, mean +/- standard deviation, or percentages as indicated. Variables were compared using the independent two-sample Student *t*-test for continuous variables, and the Pearson's Chi-square test or Fisher's exact test for categorical variables. Early mortality was defined as death from any cause within 30 days of admission.

Results/Findings: 45 patients were included. The median age was 66 (32–93) years; 27 (60%) were females. 28(62%) patients were Caucasian. The median time from ITP diagnosis to COVID-19 was 5 (1–35) years. A 27 (60%) patients required treatment for ITP before COVID-19, and only 4 patients were on low-dose prednisone at the time of COVID-19 diagnosis.

The most common symptoms of COVID-19 were shortness of breath (53%), fever (31%), and cough (22%). 29 (64%) patients were hospitalized with 12 of them requiring ICU care. Median time of hospitalization was 8 (2–45) days. COVID-19 specific treatments included steroids (42%), remdesivir (24%), chloroquine (9%), azithromycin (9%), and tocilizumab (2%). Three patients had thrombosis (2 DVTs, and 1 DVT and PE), 2 had intracranial bleeding, and 3 had mucosal bleeding.

Early mortality rate was 15.6%; death was attributed to respiratory failure in 3 patients, multi-organ failure in 3 patients, and cardiac arrest in 1 patient. None of the analyzed parameters (gender, ethnicity, age, comorbidities, severity of thrombocytopenia, thrombotic or bleeding events) was associated with ICU admission or early mortality. Patients' platelet count before COVID-19 diagnosis did not differ from the platelet count at the time of COVID-19 diagnosis with a mean platelet count of 108.5 (+/- 49.0) and 93.8 (+/- 92.8) ($p = 0.299$), respectively. In addition, there was no significant difference in the platelet before COVID-19 and after recovery.

Conclusion: Thrombocytopenia of chronic ITP patients did not worsen during COVID-19 infection or after recovery. Mortality of chronic ITP patients due to COVID-19

was not different from reported mortality of hospitalized COVID-19 patients. Our findings should be validated in larger cohorts.

P-HC-3 | Hemoglobin Level Impacts Viscoelastic Hemostatic Assays in Intracerebral Hemorrhage Patients

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Background/Case Studies: Low hemoglobin levels can impair clinical hemostasis across several diseases, including intracerebral hemorrhage (ICH). It is unclear whether hemoglobin levels impact laboratory assessments of functional coagulation. We sought to evaluate the relationship of hemoglobin level on viscoelastic hemostatic assays (VHA) in ICH patients.

Study Design/Methods: Two ICH cohorts receiving distinct VHA testing, Rotational Thromboelastometry (ROTEM) and Thromboelastography (TEG) were separately analyzed. A third, non-bleeding critically ill patient cohort receiving ROTEM was analyzed for generalizability across disease processes. Relationships between baseline hemoglobin and VHA were assessed using Spearman correlation and linear regression models. A separate *in vitro* study assessed VHA tracing changes after serial hemoglobin modifications from ICH patient blood samples.

Results/Findings: In both our ROTEM ($n = 34$) and TEG ($n = 239$) ICH cohorts, lower hemoglobin was directly correlated with faster coagulation kinetics (ROTEM: 0.46, $p = 0.01$; TEG: 0.49, $p < 0.0001$) and inversely correlated with greater clot strength (ROTEM: -0.52, $p = 0.002$; TEG: -0.40, $p < 0.0001$). Similar relationships were identified in non-bleeding, critically ill patients ($n = 121$). We continued to identify these relationships in adjusted linear regression models. When manipulating ICH patient blood samples to achieve lower hemoglobin levels *in vitro*, lower hemoglobin levels also correlated with faster and stronger ROTEM clot formation.

Conclusion: Lower hemoglobin levels lead to VHA tracings that are consistent with hypercoagulable clotting characteristics in ICH patients. Rather than representing true hypercoagulability, these relationships appear to be an artifact of the testing modality itself. Care must be taken to recognize this potential artifact to avoid undertreating relevant coagulopathy in vulnerable, critically ill bleeding patients with anemia.

P-HC-4 | Pregnancy and Prophylactic Red Cell Exchange in Sickle Cell Disease

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Background/Case Studies: Sickle cell disease (SCD) represents the most common inherited hemoglobinopathy, and advancements in medical management have increased the prevalence of women with SCD reaching reproductive age, and subsequently becoming pregnant.[1,2] SCD pregnancies are associated with a higher risk of maternal complications such as eclampsia, preeclampsia, worsening of vaso-occlusive crises, venous thromboembolism and acute chest syndrome.[3] Fetal complications include preterm delivery and impaired fetal growth.[4]
Risk factors for adverse outcomes include the Hemoglobin SS phenotype, multiple gestation, low steady-state anemia, leukocytosis, or thrombocytosis.[5] Indications for red blood cell (RBC) transfusion during pregnancy in the SCD population are acute complications of SCD, anemia exacerbations, continuing established chronic transfusion protocol, and multiple gestation.[6] The use of RBC transfusion is made even more critical because of the threat of teratogenicity that hydroxyurea poses for this population.[7] It is our contention that there is currently a dearth of literature supporting true consensus guidelines for the role of prophylactic RBC exchange within this population.

Study Design/Methods: Our case study employs a retrospective analysis of the clinical course of two patients with SCD who underwent prophylactic automated RBC exchange(s).

Results/Findings: The first case involves a G1P000 female in her late twenties with Hemoglobin S Disease receiving prophylactic automated RBC exchanges every four to six weeks. Pregnancy was complicated by sickle cell crisis resulting in pre-eclampsia and cesarean section delivery resulting in an inferior epigastric artery bleed requiring eight units of packed red blood cells. This resulted in subsequent abscess formation requiring broad spectrum antibiotic treatment.
The second case examined involves a G3P0110 female also in her late 20s who received partial manual exchanges every other week, with plan for full automated RBC exchange prior to delivery. Pregnancy was complicated by sickle cell crisis, pre-eclampsia, and emergent