Clinical pathology selected abstracts

Editor: Deborah Sesok-Pizzini, MD, MBA, professor, Department of Clinical Pathology and Laboratory Medicine, Perelman School of Medicine, University of Pennsylvania, Philadelphia, and chief, Division of Transfusion Medicine, Children's Hospital of Philadelphia.

Blood type and outcomes in patients with COVID-19

October 2020—Early in the COVID-19 pandemic, some reports linked ABO blood type to severity of the disease and test positivity. Among these were reports that blood type A was associated with a higher risk for SARS-CoV-2 infection and blood group O with a lower risk of infection and mortality. However, there is a paucity of data regarding the relationship between ABO blood type and severity of COVID-19. Therefore, the authors conducted a large multi-institutional observational study to determine if there is an association between ABO blood type and severity of COVID-19 and if those with specific blood types are more likely to test positive for the disease. For the study, they used a large multi-institutional database of adult patients who tested positive for SARS-CoV-2 at five major hospitals in Massachusetts from March 6 to April 16. The authors evaluated hospitalization, intubation, and death for an association with blood type. During the study period, 7,648 symptomatic patients underwent COVID-19 testing. Of these patients, 1,289 tested positive and their blood type was documented. The results showed that 34.2 percent were blood type A, 15.6 percent blood type B, 4.7 percent blood type AB, and 45.5 percent blood type O. The results did not show an association between blood type and any of the peak inflammatory markers nor between blood type and any of the clinical outcomes of severity. After multivariate analysis, blood type also was not shown to be independently associated with risk of intubation or death. In addition, blood type A was not shown to correlate with positive testing. However, blood types B and AB were associated with higher odds of testing positive for the disease and blood type O was associated with a lower risk of testing positive. The authors concluded that blood type is not associated with risk of progression to severe disease requiring intubation or causing death, nor is it associated with higher peak levels of inflammatory markers. They noted that their findings about the association between blood type A and the likelihood of testing positive differ from what was reported in earlier studies. Of interest, the finding that blood type O is less common in SARS-CoV-2 infection correlates with a finding for SARS-CoV-1.

Latz CA, DeCarlo C, Boitano L, et al. Blood type and outcomes in patients with COVID-19. *Ann Hematol*. 2020. https://doi.org/10.1007/s00277-020-04169-1.

Correspondence: Dr. Christopher A. Latz at christopher.latz@mgh.harvard.edu

Link between survival and use of low-titer group O whole blood in severe traumatic hemorrhage

Trauma is a leading cause of death, with many mortalities resulting from hemorrhage. In the United States alone, 30,000 annual traumatic hemorrhagic shock deaths are estimated to be preventable if patients are given timely and adequate care. Interest
in using low-titer group O whole blood (LTOWB) for hemorrhagic shock is increasing based on the rationale that LTOWB is more potent and safer and provides greater logistical benefit than component therapy. In addition to having increased oxygen-carrying capacity, LTOWB contains platelets that have been stored cold. Cold-stored platelets are more hemostatically active than the room temperature-stored platelets used in component therapy. Therefore, use of LTOWB mitigates bacterial contamination risk. The authors hypothesized that use of LTOWB is independently associated with improved 24-hour and 28-day mortality and reduces the amount of blood product transfused in the initial 72 hours after injury. Furthermore, they hypothesized that it does not increase 72-hour multiple organ dysfunction scores (MODS) when compared to the exclusive use of component therapy in adult patients with traumatic injury who require massive transfusion protocol activation. The authors performed a prospective observational study using trauma patients 18 years or older for whom massive transfusion protocols were activated. Data on the LTOWB group were collected between December 2018 and May 2019. Data on the

control group were collected from patients who received component therapy exclusively between August and December 2018. The authors analyzed 42 patients in the group that received component therapy exclusively and 44 patients in the group that received LTOWB. They then performed multivariable logistic regression and Cox regression to determine independent associations. The results showed no clinically meaningful differences in measures of injury severity or MODS between the study groups. The unadjusted mortality also was not statistically different between the two groups (nine of 42 [21 percent] for component therapy versus seven of 44 [16 percent] for LTOWB). In the statistical model, the use of LTOWB increased the odds of 24-hour survival by 23 percent (odds ratio, 0.81; $p = .017$). Adjusted survival curves analysis also showed improved survival at 24 hours and 28 days for LTOWB patients ($p = <.001$). The authors concluded that the use of LTOWB improves survival when compared to the use of component therapy, especially in coagulopathic patients. LTOWB is independently associated with improved 24-hour and 28-day survival and does not increase the 72-hour organ dysfunction score. Therefore, the study supports the use of LTOWB in the hemorrhaging trauma patient. Large multicenter clinical trials are needed to confirm the efficacy and safety of LTOWB compared to component therapy for hemostatic resuscitation.

Shea SM, Staudt AM, Thomas KA, et al. The use of low-titer group O whole blood is independently associated with improved survival compared to component therapy in adults with severe traumatic hemorrhage. *Transfusion*. 2020;60:S2–S9.

Correspondence: Dr. Susan M. Shea at susan.shea@wustl.edu