Clinical Pathology Selected Abstracts, 11/13

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Analysis of transfusion related lung injury in children

Transfusion-related lung injury continues to be a concern and has become the leading cause of transfusion-related mortality. Recent efforts to store plasma from male donors and newer regulations that require screening for human leukocyte antibody female donors are intended to help mitigate the risk of transfusion-related lung injury (TRALI). The authors submitted a retrospective review of TRALI cases to the Canadian Blood Service to characterize the demographic features, clinical presentation, patient outcomes, and antibody profiles of TRALI patients. The review included 284 TRALI cases, with 17 occurring in children. The authors reviewed reported TRALI cases during a 10-year period. Their results showed no significant difference between pediatric or adult patients with TRALI with regard to presentation or outcome. The majority of the pediatric patients were less than a year old or teenagers. The estimated rate of TRALI using crude modeling per 100,000 red blood cell transfusions was estimated at 5.58 for children and 3.75 for adults. At least half of the cases involved red blood cell components, in contrast to other studies that reported a lower rate of TRALI incidence in red blood cell recipients compared to plasma product recipients. The authors concluded that TRALI continues to be a challenging diagnosis and that future studies are needed to determine if different criteria may be necessary to diagnose TRALI in pediatric patients, particularly in neonates. This is due to neonates being vulnerable to fluid overload, which may confound the diagnosis of TRALI in such patients.

Lieberman L, Petraszko T, Yi Q-L. Transfusion-related lung injury in children: a case series and review of the literature [published online ahead of print June 13, 2013]. *Transfusion*. doi:10.1111/trf.12249.

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Assessing outcomes of medical emergencies on commercial airline flights

Approximately 2.75 billion passengers fly on commercial airlines annually. On occasion, a medical emergency will occur with a passenger and real-time medical advice from an emergency call center will be needed. The authors reviewed the records of in-flight medical emergency calls from five domestic and international airlines from Jan. 1, 2008 through Oct. 31, 2010. They analyzed 11,920 in-flight medical emergencies that led to contact with an emergency call center. The most common emergencies were related to syncope or presyncope (37.4 percent), respiratory symptoms (12.1 percent), and nausea or vomiting (9.5 percent). Of interest, physician passengers provided assistance in 48.1 percent of in-flight medical emergencies, and aircraft were diverted only 7.3 percent of the time. Of 25.8 percent of passengers transferred to the hospital, 8.6 percent were admitted and 0.3 percent died. The most common reasons for admission were stroke, respiratory symptoms, and cardiac symptoms. The investigators suggested, on the basis of their findings, an algorithm for approaching the more common in-flight emergencies. The authors also noted that common challenges to providing medical care aboard an aircraft are limited space and equipment. The authors concluded that airline passengers who are physicians should be aware of their potential role as volunteer responders during a medical emergency, and systematic tracking should be done for all in-flight emergencies to guide future interventions.

Peterson DC, Martin-Gill C, Guyette FX, et al. Outcomes of medical emergencies on commercial airline flights. *N Engl J Med.* 2013; 368:2075–2083.

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Link between inflammatory biomarkers and risk of exacerbations in COPD

Frequent exacerbations of respiratory symptoms in chronic obstructive pulmonary disease may impact patients by accelerating loss of lung function and reducing quality of life, leading to poor survival. Predicting patients who will suffer from chronic obstructive pulmonary disease (COPD) exacerbations is difficult, and a previous exacerbation alone has poor predictive value. Exacerbations are often caused by respiratory infections, and the levels of acute-phase proteins and inflammatory cells are elevated. The authors tested the hypothesis that elevated levels of inflammatory biomarkers in stable COPD patients are associated with an increased risk of having exacerbations. They investigated patients with spirometry measurements from the Copenhagen City Heart Study and Copenhagen General Population Study. Of these patients, 6,574 had COPD, which was defined as a ratio between forced expiratory volume in one second (FEV1) and forced vital capacity below 0.7. The authors recorded baseline measurements of C-reactive protein (CRP) and fibrinogen and leukocyte counts at a time when patients were not experiencing symptoms of exacerbations. COPD exacerbations were then defined as a short-course treatment with oral corticosteroids alone or combined with antibiotics or a hospital admission due to COPD. The results, using a multivariable-adjusted odds ratio for frequent exacerbations, were 1.2 for individuals with one high biomarker, 1.7 for two high biomarkers, and 3.7 for three high biomarkers, compared with patients who had no elevated biomarkers. The authors concluded that simultaneous elevation of CRP, fibrinogen, and leukocyte counts in people with COPD were associated with an increased risk of exacerbations. This was true even for those patients with milder COPD and without prior exacerbations. The authors suggested that additional studies are needed to determine the clinical value of these biomarkers for risk stratification.

Thomsen M, Ingebrigtsen TS, Marott JL, et al. Inflammatory biomarkers and exacerbations in chronic obstructive pulmonary disease. *JAMA*. 2013;309:2353–2361.

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