Recurrent acquired methemoglobinemia secondary to an over-the-counter (OTC) topical benzocaine product

Local anesthetics are common OTC medications but are also widely used to facilitate multiple inpatient procedures. Of these agents, benzocaine may be the most ubiquitous and common cause of acquired methemoglobinemia. Methemoglobinemia is a potentially life-threatening condition characterized by an abnormal serum level of methemoglobin, a form of hemoglobin which impairs oxygen release. We report the case of a 64 years old female that presented to the emergency department with shortness of breath (SOB) and cyanosis. Her past medical history included acute respiratory failure, pneumonia, chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF), renal cysts, and atrial fibrillation. The patient had undergone revision of her right total shoulder replacement 10 days prior to admission with a blood transfusion shortly after the procedure. She reported current smoking with history of 20 pack-years, acute peripheral edema, and a self-reported pulse oximetry in the 70s for the past few days. Upon presentation the patient was not in distress, had vascular congestion on chest x-ray, microcytic anemia, and oxygen saturation of 75 percent on room air. The patient was initially placed on 22 liters of high-flow nasal cannula which successively was lowered to 8 liters after pulse oximetry was maintained at 93 percent. Arterial blood gas (ABG) displayed a partial pressure of oxygen (PaO2) of 205 millimeters of mercury (mm Hg), oxyhemoglobin of 77 percent, and a methemoglobin level of 15.6 percent. The Poison Control Center was consulted and an internal case review was conducted; the etiology of methemoglobinemia could not be determined. The patient was admitted to the progressive care unit for methemoglobinemia observation and to treat her COPD and CHF exacerbation. Her outpatient medications were continued, which included albuterol, glycopyrrolate-formoterol, ferrous sulfate, ipratropium-albuterol, furosemide, prednisone, and warfarin. On hospital day two, pulmonary embolism was ruled out and ABG results showed a methemoglobin value of 0.3 percent. At this junction, her methemoglobinemia was considered resolved but its underlying etiology was not elucidated. On hospital day three, Cardiology, Nephrology, and Gastroenterology were consulted and made recommendations to optimize therapy. On days four and five, the patient was weaned off of oxygen and was stable enough to be discharged. The patient returned to the hospital after two days, presenting with similar, but more severe symptoms. She was cyanotic and experiencing SOB. Her laboratory results an oxygen saturation of 75 percent on room air, PaO2 of 152.7 mm Hg, oxyhemoglobin of 71.6 percent, lactate of 5.63 millimole per liter, and a methemoglobin value of 20.9 percent. The patient received symptomatic care, methylene blue, and was admitted to the progressive care unit for observation. On day two, the patient symptomatically improved, however on day three the patient was administered another methylene blue dose due to new onset, declining respiratory status and a methemoglobin level of 12 percent. The medical team consulted a pharmacist to review the case to potentially identify the cause. Upon patient interview, the pharmacist revealed that the patient had been intermittently using an OTC benzocaine medication for dental pain before and during her admissions, and she had a tube of this medication stored in a purse in her hospital room. The applications of this topical analgesic had a temporal relation to the patient’s symptoms and methemoglobinemia on both admissions. On the following day, the patient stabilized,
her laboratory values returned to normal, it was recommended that she not use benzocaine-like products again, and she was discharged. This case illustrates the importance of a complete, thorough medication reconciliation, and the value of a clinical pharmacist as a member of the healthcare team.