Methemoglobinemia as a Complication of Topical Dapsone

Greg S Swartzentruber,¹ Joseph H Yanta,¹ Anthony F Pizon,¹ Nathan B Menke¹
¹University of Pittsburgh Medical Center, Pittsburgh, PA

Background
• Methemoglobinemia (MetHgb) may result from a wide variety of oxidant stressors
• Dapsone (Figure 1) and its acetylated metabolite, dapsone hydroxylamine, are known oxidants and have been frequently reported as a cause of MetHgb
• Topical dapsone has not been previously reported as a cause of MetHgb

Hypothesis
• Methemoglobinemia may be caused by systemic absorption of topical dapsone gel

Case Report (continued)
• SpO₂ increased to 90% following treatment with oxygen
• Dyspnea persisted despite treatment with 2 liters per minute of oxygen by nasal cannula
• Chest radiograph and electrocardiogram were normal
• Laboratory studies were within normal limits (Hgb 12.4 mg/dL) except for a MetHgb level of 20.3%
• A single intravenous bolus of 2 mg/kg methylene blue was given which resulted in complete resolution of cyanosis and symptoms
• Repeat MetHgb level 2 hours after treatment was 1.9%
• Urine gas chromatography/mass spectrometry qualitative drug screen demonstrated dapsone alone
• Nine hours after treatment, MetHgb level was 7.2%
• Discharged home without symptoms after 24 hour observation period

Conclusion
• Topical dapsone gel may be absorbed systemically causing oxidant stress and resultant methemoglobinemia

Figure 1. Chemical structure of dapsone