

# Methemoglobinemia as a Complication of Topical Dapsone

Greg S Swartzentruber,<sup>1</sup> Joseph H Yanta,<sup>1</sup> Anthony F Pizon,<sup>1</sup> Nathan B Menke<sup>1</sup>

<sup>1</sup>University 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

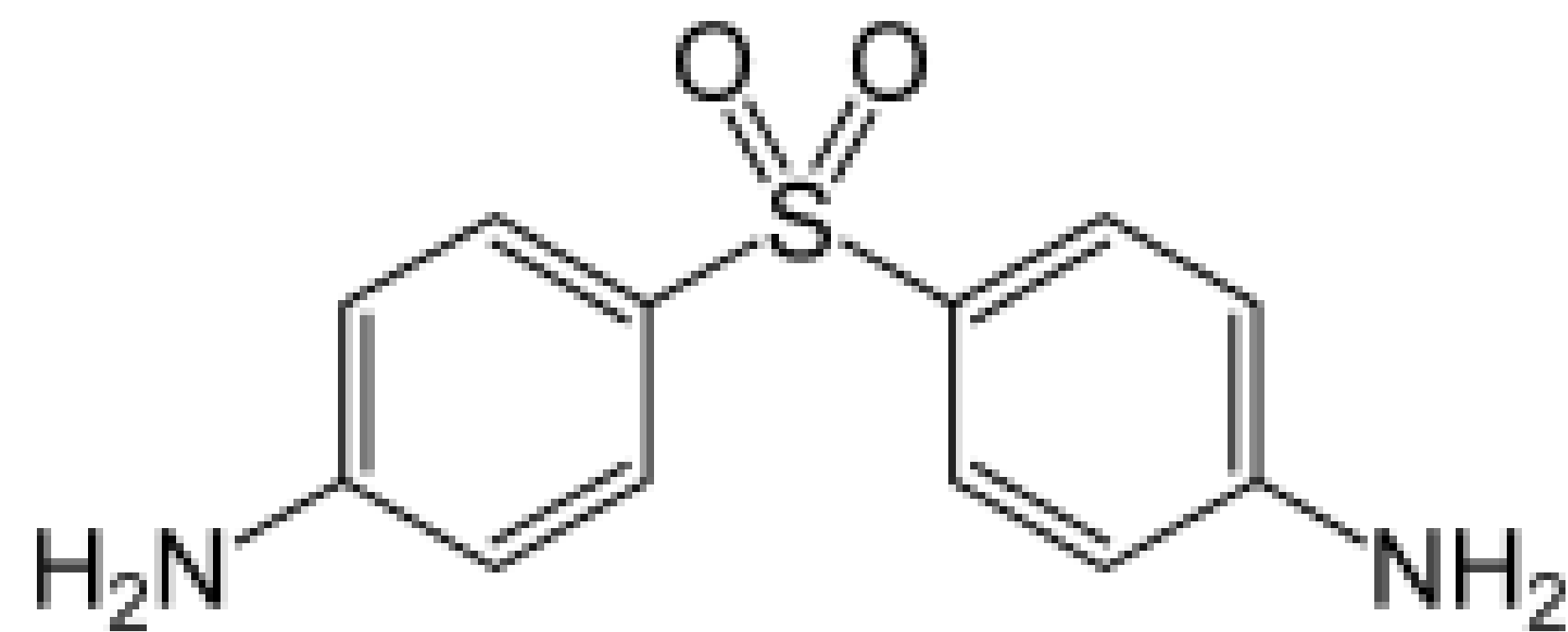


Figure 1. Chemical structure of dapsone

## Hypothesis

- Methemoglobinemia may be caused by systemic absorption of topical dapsone gel

## Case Report

- A 19 year-old healthy female presented to the emergency department with blue lips and nail beds
- Prescribed medications included citalopram, topical dapsone 5% gel (Aczone<sup>®</sup>), and oral contraceptives
- Complained of a mild headache and mild dyspnea
- Initial vital signs were normal except for an oxygen saturation of 82% on room air

## Case Report (continued)

- SpO<sub>2</sub> 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

