Dermal and Inhalational Exposure to Paint Thinner Causing Methemoglobinemia

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Introduction

• Methemoglobinemia is an uncommon cause of cyanosis
• From oxidation of ferrous (Fe2+) to ferric (Fe3+) hemoglobin
• This is the only case of transdermal or inhalational exposure to paint thinner causing elevated methemoglobin (MetHgb)

Case Report

• 50 year old man was cleaning his paint brushes in a poorly ventilated room without gloves
• Paint thinner contained 1,2,4 trimethylbenzene and petroleum based stoddard solvent
• Developed shortness of breath and significant cyanosis 1 hour later
• ED vitals were HR 118, BP 103/66, RR 22, SpO2 88% on 15L NRB
• Exam noted central cyanosis and ashen skin color and his blood was dark.

Results

• ABG was noted to have 29.7% MetHgb
• Patient given 100 mg of methylene blue
• Within 10 minutes, the patient’s color improved and he was quickly weaned off oxygen
• No rebound methemoglobinemia

• ABG: pH of 7.42; PCO2, 35 mm Hg; PO2, 210 mm Hg; HCO3, 24 meq/L; CO 5.8%; MetHgb 29.7%
• Repeat levels of MetHgb were <1% 4 and 8 hours after treatment with methylene blue

Discussion

• This is the first described case of methemoglobinemia caused by paint thinner exposure not from ingestion
• Proper PPE and well ventilated areas when working may have prevented this
• 1,2,3 trimethylbenzene is the likely source of methemoglobinemia
• Methylene blue quickly and effectively treated his toxicity

Conclusion

Paint thinner may cause methemoglobinemia from dermal and/or inhalation exposure, not just ingestion