

## Kid that do meth case report on peadiatric methhemoglobinemia

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**Introduction:** Methemoglobinemia is a rare but life-threatening hematologic condition where hemoglobin is oxidized from the ferrous (Fe<sup>2+</sup>) to the ferric (Fe<sup>3+</sup>) state, impairing oxygen delivery to tissues. While congenital forms exist, acquired methemoglobinemia, often triggered by medications or chemical exposures, is more common. Prevalence in pediatric populations is estimated at approximately 0.0015%.

**Case Presentation:** A 6-year-old male presented to the Apollo Hospitals Emergency Department with fever, abdominal pain, vomiting, epistaxis, and acute breathlessness. Physical examination revealed central and peripheral cyanosis with an SpO<sub>2</sub> of 88% on room air, which only improved to 92% despite high-flow oxygen (10 l). Notably, the patient had a history of exposure to a watch repair solution and prior consumption of "outside food."

**Diagnostic Workup:** Venous blood gas (VBG) analysis confirmed methemoglobinemia with a level (FMetHb) of 31.0% and respiratory alkalosis. Laboratory results showed mild thrombocytopenia (Platelets: 89,000) and a normal hemoglobin (15.5 g/dl). G6PD deficiency was ruled out. Despite initial chest X-ray findings suggesting cardiomegaly, 2D echocardiography with contrast confirmed normal cardiac function and no pulmonary arteriovenous malformations.

**Management and Outcome:** The primary objective was to restore oxygen-carrying capacity. The patient received a 1 mg/kg IV bolus of Methylene Blue (20 mg diluted in 0.9% NS) over 15 minutes, alongside Vitamin C (500 mg BD) and supportive oxygen. Following the antidote, SpO<sub>2</sub> improved to 100%, and cyanosis resolved. Post-treatment VBG showed FMetHb reduced to 6.1%. The patient remained hemodynamically stable and was successfully weaned from oxygen.

**Discussion:** This case highlights the "saturation gap", low SpO<sub>2</sub> unresponsive to supplemental oxygen, as a clinical hallmark of methemoglobinemia. Prompt administration of Methylene Blue is the gold standard for levels >20% or symptomatic patients.

**Conclusion:** Early recognition of environmental toxins is critical for diagnosis. Management must focus on rapid reversal with Methylene Blue and comprehensive patient counseling to prevent re-exposure to oxidizing agents. In refractory cases, escalation to exchange transfusion or hyperbaric oxygen may be necessary.

**Keywords:** Methemoglobinemia.