



A CASE OF SATURATION CONFUSION

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ABSTRACT

Dapsone- a drug commonly used for the treatment of dermatological conditions and Hansen's disease. Although its side effects are well documented, it is a rare cause of cyanosis. Our case is a young female presenting with breathlessness and cyanosis. This case highlights the importance of history taking and proper correlation with clinical examination in the era of evidence based medicine.

KEYWORDS : Methemoglobinemia, Dapsone, Pulse-oximetry, Arterial blood gas

INTRODUCTION

Methemoglobinemia, a potentially fatal condition characterized by elevated levels of methemoglobin in the blood resulting in tissue hypoxia. Methemoglobinemia is considered an infrequent cause for cyanosis and thus, history taking and its clinical correlation is of paramount importance for rapid detection of the disease and immediate treatment of the same.

CASE HISTORY

A 35-year-old moderately built female patient presented to the E.R with a 3-day history of progressive fatigue and 1-day history of breathlessness and bluish discoloration of lips. History of dyspnea at work with no associated chest pain, palpitations, orthopnea or PND. There was no history of recent respiratory infections, cold exposures or congenital heart disease. On enquiring further, we learnt that the patient had visited her dermatologist 6 months back and was started on Prednisolone 20mg and Dapsone 200mg for treatment of Lichen Planus. Patient has a regular menstrual history and no history of cardiac diseases, Type-2 diabetes mellitus, systemic hypertension, Bronchial asthma or seizure disorder.

On examination, the patient was dyspnoeic at rest. Cyanosis of the lips was present. The vitals included Pulse- 90/minute, regular, normal volume. B.P- 120/80 mm of Hg. Temperature- 98 F, Respiratory Rate- 24/min, Saturation with a digital pulse oximeter showed 70% in room air. Cardiovascular, Respiratory, Abdominal examination and Central nervous system were unremarkable. Although the patient was immediately started on nasal 5L/min, the patient's saturation did not improve. In view of low saturation, an arterial blood gas was done which revealed a chocolate-brown blood (Figure 1) with an oxygen saturation of 99%, Ph-7.38, PO₂-99mm Hg, PCO₂- 16mm Hg and Bicarbonate level was 22 mmol/L. The Haemoglobin was 11.2g%. A provisional diagnosis of methemoglobinemia secondary to Dapsone use was put forward and was confirmed with Serum levels of methemoglobin that was found to be 5.6% (normal <1%). The patient was immediately shifted to ICU for observation and

serial methaemoglobin levels were monitored. Dapsone was stopped. The SPO₂ remained 85-88% over the next few days, despite the normal SaO₂ levels. No active intervention was done and the patient gradually improved symptomatically.

DISCUSSION

Methemoglobin- Although a normally occurring metabolite in the body is always less than 1%. Methemoglobin contains the ferric form of Iron which contains less affinity towards oxygen. Thus, the oxygen-hemoglobin dissociation curve is shifted to the left. This leads to adverse hematological complications like hemolysis and methemoglobinemia.

Dapsone being a sulfone antibiotic is an inhibitor of folate synthesis. It is metabolized in the liver by cytochrome P450 and sometimes leads to adverse hematological complications like hemolysis, methemoglobinemia. It is also associated with various drug interactions. Even though it was traditionally used for the treatment of leprosy, Dapsone is also sometimes used for the treatment of dermatological conditions.

Methylene Blue is the treatment of choice for methaemoglobin levels more than 20% (1-2 mg /kg body weight) and is contraindicated in G6PD deficiency. Exchange transfusion is recommended for patients with G6PD deficiency or those unresponsive with methylene blue. Hyperbaric oxygen is another method of treatment for refractory methemoglobinemia. In this case, the diagnosis of methemoglobinemia was suspected purely based on a clear history of Dapsone use in addition to the difference in saturation clinically.

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