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ACUTE METHEMOGLOBINEMIA INDUCED BY DAPSONE

ABSTRACT

Acute methemoglobinemia is an uncommon but potentially treatable disorder in witch patient can present with dramatic signs and symptoms. The early diagnostic and treatment are essentials to prevent this fatal medicine reaction.

Trindade MAB, Careta MF. Acute Methemoglobinemia induced by dapsone case report in leprosy treatment. Hansen int. 2008; 33 (2): 31-34.

INTRODUCTION

The methemoglobinemia is a condition in which an abnormal proportion of the iron in heme moiety of the hemoglobin is oxidized to the ferric state leading to impaired oxygen transport and anemic hypoxia.

Methemoglobinemia refers to any increase in normal methemoglobin levels. It can cause tissue ischemia and death. It results most commonly from a toxic exposure, but in rare cases it can be hereditary [3].

Methemoglobin levels of 10% to 20% usually produce cyanosis. Levels of 20% to 50% will cause symptoms such as respiratory distress, dizziness, headache, and fatigue. Lethargy and stupor develop at levels around 50% and death may occur around 70% [2]. Any patient with cyanosis unresponsive to oxygen who has a normal PaO_2, should be evaluated for methemoglobinemia.

About 40 substances have been implicated in causing this condition, the most prominent being dapsone, nitrates, prilocaine, antimalarials and sulfonamids. Dapsone is used to treat several systemic inflammatory diseases, such as leprosy [3]. The introduction of treatment complicated by methemoglobinemia, is an uncommon side effect of dapsone, the incidence related is arround 5-6,5% of adverse reactions of leprosy treatment [1].

CASE DESCRIPTION

This report describes the case of a female 25 years old, recepcionist, that showed complicated by methemoglobinemia when started the treatment for indeterminate leprosy with rifampicine and dapsone. She looked for ambulatory assistance on the fourth days after 100 mg/day of dapsone because her hands, nose and foots are blue and slow headache. After about one hour on physical examination showed a lethargic girl with respiratory distress, fatigue and dizziness with normal vital signs and normal size pupils that were reactive to light. The conjunctivae were not pale and the scleras were not icteric. Her clinical course included bluish discoloration of lips and limbs, a high PaO_2 in the presence of cyanosis. The clinical history lead to suspicion of methemoglobinemia.

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Patient was underwent oxigen mask (10l O2/min). Therefore, methemoglobinemia secondary to dapsone intoxication was assumed, and 1 mg/kg methylene blue diluted with 100 ml normal saline was given IV over 30 min. Laboratory results showed methemoglobin level to be 4.0 g/dL (40%). The investigation for G6PD deficiency had normal resulted.

In this patient symptoms improve about half hour and she had discharge in the same day. After she had the medications changed to an alternative treatment for leprosy with out dapsone (rifampicin, oflaxacin and minoycline) for one month.

DISCUSSION

In the present patient, normal oxygen saturation on the first arterial blood gas along with cyanosis and mild tachypnea diverted the attention to methemoglobinemia. Methemoglobin level is useful to confirm the diagnosis, but it is not as important as the patient's clinical status for determining early treatment.

In dapsone poisoning, varying clinical presentations such as severe cyanosis, restlessness, dyspnea, extensive hemolysis, anemia and/or serious central nervous system dysfunction are expected. In addition, nausea and vomiting, tachycardia and elevation of blood pressure have been reported [2,5,11] . Dapsone overdose is often dangerous and potentially lethal. Methemoglobinemia resulting from the ingestion of dapsone has been described as cyanosis without respiratory distress. The cyanosis is unresponsive to oxygen administration.

For symptomatic patients, initial treatment includes administering oxygen. If no have improve and/or if have history of contact with methemoglin-inducer substances the treatment of choice is methylene blue [3,11]. It is administered typically in doses of 1 to 2 mg/kg of body weight intravenously. Symptoms should improve rapidly [2,4] . Repeat doses may be indicated if symptoms persist, as may occur if there is continued absorption of the methemoglobin-inducer [8]. In the present case, single-dose administration of the antidote was sufficient.

In cases of treatment failure with methylene blue, hyperbaric oxygen therapy and exchange transfusions can be considered. Methylene blue is generally contraindicated in people who have a genetic defect in natural reduction systems, including those with G_6PD deficiency witch are also prone to methylene blue-induced hemolysis. Due to the long half-life and unique methemoglobin-inducing metabolites of dapsone, cimetidine may be used to block production of the toxic metabolites, thereby limiting the duration of dapsone-related methemoglobinemia [12].

This report intend to show the importance of the diagnostic and treatment of this adverse effect of dapsone. Principally, because the majority of pacients with leprosy are treated with dapsone in the basic units of health, that cannot have suport to conduct this letal and reversible emergency.

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