

## CASE REPORT

## Prevention of Dimorphic Anemia through a Case Study

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## ABSTRACT

Anemia refers to a medical condition wherein the red blood cell count or hemoglobin is lower than normal. It is the most common disease affecting humankind and is responsible for morbidity and mortality among the general population. In men, anemia is typically defined as hemoglobin less than 13.5 g/100 mL and in women less than 12.0 g/100 mL. Dimorphic anemia is mainly caused due to two deficiencies, iron-deficiency, and nutritional macrocytic anemia. It is, therefore, iron-deficiency anemia complicated by nutritional macrocytic anemia or may be regarded as vice versa condition. Herein, I present a case of 30 years of the third gravida who had been anemic through the entire course of pregnancy even after many blood transfusions. Peripheral smear revealed dimorphic macrocytic anemia. Purpose of this study is to understand the causes, affect and treatment of dimorphic anemia.

**Keywords:** Cesarean delivery, Dimorphic anemia, Vitamin B<sup>12</sup> deficiency.

**How to cite this article:** Malhotra P. Prevention of Dimorphic Anemia through a Case Study. *World J Anemia* 2018;2(2):66-67.

**Source of support:** Nil

**Conflict of interest:** None

## INTRODUCTION

Anemia can be elaborated as a condition in which there is a decrease in the total amount of red blood cells (RBCs) or hemoglobin in the blood, or a lowered ability of the blood to carry oxygen. Symptoms are different depending on the progress of anemia.<sup>1</sup> While in slow progress, the person may feel tired, weakness, shortness of breath, poor ability to exercise and other vague symptoms on the other hand when comes quickly, there are greater symptoms which may include confusion, loss of consciousness, increased thirst or one may feel like passing out. Pale appearance determines significant anemia. However other symptoms occur depending on the cause of anemia. Dimorphic anemia means anemia which shows two different populations of (RBCs) on routine testing.<sup>2</sup>

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This commonly occurs due to:

- Two underlying pathologies for anemia, both of which give rise to different RBC populations, e.g., iron deficiency and vitamin B<sup>12</sup> deficiency. Folic Acid deficiency anemia occurring simultaneously, either due to dietary deficiencies or alcoholism.
- Partially treated anemia, e.g., in case of severe anemia, sometimes the patient is given blood transfusions. So, the patient will again have two different RBC populations, original diseased ones, and healthy transfused ones.
- Less commonly, this form of anemia is seen in a genetic disorder of iron metabolism called as sideroblastic anemia. Here, some RBC precursor cells are affected, some are not giving rise to two different RBC populations. Histologically, in dimorphic anemia, all three types of erythropoiesis can be detected, hypochromic, megaloblastic and normoblastic, latter, however, usually predominating.<sup>3</sup> On peripheral blood smear, hypochromic cells are concentrated in the central parts of the smear whereas orthochromic macrocytes are collected at the tail. This is very characteristic of the diagnosis of dimorphic anemia.

For the treatment part, the first two categories can be treated by identifying the underlying cause and treating the deficiency/dietary modifications/stopping excess alcohol consumption. Partially treated anemia should be identified and treated completely. Sideroblastic anemia needs further work up to confirm the diagnosis and treated according to the degree and severity of the disease.

## CASE STUDY

A 30 year of the third gravida presented for a routine checkup and routine blood checkup revealed significantly decreased Hb (5.5 g/dL). History revealed earlier miscarriage and one healthy child. The patient was in the last trimester of pregnancy. Peripheral smear showed dimorphic macrocytic anemia. She was then admitted, and 2 units of blood were transfused. At the time of delivery, her blood checkup again had decreased level of Hb (6.0 g/dL). Looking at other obstetric reasons, she was then planned for cesarean delivery.<sup>4</sup> Three units of blood and four FFP were again transfused. During the entire course of pregnancy, the patient has been anemic even the repeated blood test showed increased Hb

(8.6 g/dL) but not in the range. After delivery, she was kept in observation and thereafter discharged with an uneventful admission.

## DISCUSSION

About one-third or 30% of the world's population is suffering from anemia due to various causes. In India, prevalence is very high as compared to world prevalence. In India prevalence is approximately 51%. Impact of anemia is more on pregnant women and children. According to the World Health Organisation (WHO), "iron-deficiency anemia reduces the work capacity of individuals and entire populations, bringing serious economic consequences and obstacles to national development".<sup>5</sup>

In a report in 2016 showed that nearly 48% of Indian women are anemic, more than half (51%) of all women of reproductive age have anemia whereas more than one in five (22%) of adult women are overweight.

In India, leading causes of anemia are poverty, caste factors, poor sanitation, frequent occurrences of malaria and worm infestation.

Although a vegetarian diet contains as much dietary iron as a nonvegetarian diet, research in 2011 has shown that animal-based iron is better absorbed (15–40%) than plant-based iron (1–15%). To make up for the low absorption, large quantities of green leafy vegetables, pulses, and nuts need to be consumed. But these are unaffordable for the poor. For proper treatment of anemia following factors should be considered:<sup>6</sup>

- Public health significance and prevalence of anemia
- Identify priority target groups
- Areas of greatest anemic prevalence
- Causes of anemia
- To know what people understand about anemia and their experience with anemia prevention and control program.

To ensure the successful curbing of this problem raise awareness across sectors, educate about anemia build partnerships in health, agriculture, food, and pharmaceutical sectors, among government ministries and agencies, NGOs, donors, industry, and commerce develop interventions and implement plans.<sup>7</sup>

## CONCLUSION

Anemia although prevalent but treatable disease. Customized programs are needed both among rural and urban areas according to the socioeconomic groups, particularly for the urban and rural poor. Ultimately it is hat one tiny worthy cell which group together to form an efficient human machinery and in the end leading to a healthy world population.

## REFERENCES

1. Trowell HC. The morphology of the blood in dimorphic anaemia. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1942 Nov 30;36(3):165-176.
2. Lang N, Bartold PM, Cullinam M, Jeffcoat M, Mombelli A, Murakami S, et al. International classification workshop consensus report: Aggressive periodontitis. *Ann Periodontol* 1999;4:53.
3. Tonetti MS, Mombelli A. Early-onset periodontitis. *Ann Periodontol* 1999;4:39-53.
4. Padmanabhan S, Dwarakanath CD. Severe gingival enlargement associated with aggressive periodontitis. *J Indian Soc Periodontol* 2013;17:115-119.
5. Mahajan A, Dixit J, Verma U. An intriguing case of gingival enlargement associated with generalized aggressive periodontitis. *Periodontol Pract Today* 2007;4:295-299.
6. Carranza FA, Hogon EL. Gingival enlargement. In: Newman MG, Takei H, Klokkevold P, Carranza FA, editors. *Carranza's Clinical Periodontology*. 10th ed. St. Louis, MO: Saunders Elsevier; 2006. pp. 374-388.
7. Singh AK, Saxena A. The periodontal abscess: A review. *J Dent Med Sci* 2015;14:81-86.