

## Commentary

### Recent Trends in the Management of Anaemia in Pregnancy

Anaemia remains a common problem in pregnancy among Nigerian women. Recent estimates suggest that up to 60% of pregnant women in developing countries, including Nigeria, may be anaemic and nearly 7% of pregnant women are severely anaemic<sup>1,2</sup>. Those who are pregnant for the first time and those who have had five or more babies (grandmultipara) are particularly at risk of developing anaemia. Anaemia can have grave implications for both mother and fetus<sup>3</sup> and every effort should be made to prevent it or treat it to avoid such adverse consequences. The article by Afolabi and Akinola<sup>4</sup> on the impact of anaemia on babies birthweights clearly illustrates the dangers of abnormal haematocrit values in pregnancy.

#### Definition:

The definition of what constitutes anaemia in pregnancy has been the subject of lively debate for several years. The World Health Organization (WHO) defines anaemia as a haemoglobin concentration lower than 11 g/dl or a haematocrit lower than 33%. If this definition were however to be applied in Nigeria, more than two-thirds of the women attending antenatal clinics in this country will require to be investigated for anaemia. In practice, it has been found that a large number of pregnant Nigerian women with haematocrit values between 30 and 33% get through pregnancy without any apparent ill effects to themselves or their offspring. Thus, in practice, only anaemia with haematocrit lower than 30% is deemed worthy of further investigation and treatment in this environment.

#### Types of Anaemia Seen in Pregnant Women

The anaemias of pregnancy can be divided into three main groups:

1. Inadequate Production of New Red Blood Cells
2. Excessively Rapid Destruction of Red Blood Cells
3. Bleeding During Pregnancy

#### *Inadequate Production of Erythrocytes*

Many factors can interfere with the production of red blood cells (RBCs). The most important reason for the failure of the bone marrow to produce adequate quantities of RBCs is a shortage of one or more of the micronutrients required for RBC production. The nutrients attracting the most attention in this regard are:

Iron, Folic Acid and  
Cyanocobalamin (Vitamin B<sub>12</sub>)

Other factors that may lead to defective RBC production are those that lead to aplastic anaemia such as haemoglobinopathy (sickle cell disease) and human parvovirus infection. Inadequate erythropoiesis may

also be due to deficiency of erythropoietin, as seen in patients with renal diseases in pregnancy.

#### *Excessively Rapid Destruction of Erythrocytes*

The most important factors producing or facilitating this are

Severe Malarial Parasitisation  
Sickle Cell Disease  
Other Hereditary Defects of the RBCs such as  
Glucose-6-Phosphate Dehydrogenase (G6PD)  
Deficiency and Congenital Spherocytosis  
Autoimmune Antibodies to RBCs in Maternal  
Blood

#### *Haemorrhage During Pregnancy*

Haemorrhage, either early or late in pregnancy can lead to anaemia if it is sustained or if it is severe. Different problems with placentation such as a low-lying placenta or placental abruption can produce haemorrhage. If the bleeding is acute, it can lead to hypovolaemic shock but sometime the bleeding is chronic in nature and the patient presents in hospital with anaemia. Occasionally, the bleeding is from an abnormal growth in the genital tract such as a polyp or cancer. Blood may be lost through the gastrointestinal tract in patients with hookworm infestation.

#### Investigation of a Patient With Anaemia in Pregnancy

It is important to identify the underlying cause of anaemia in a pregnant woman so as to fashion a rational approach to the management of the problem. A good clinical history and physical examination can yield a lot of useful clues about the probable causes of the anaemia. The laboratory investigations that are essential for making an accurate diagnosis include the following:

Haematocrit Estimation this helps to assess the degree of anaemia

Haemoglobin Concentration

Full Blood Count, including Differential

White Cell Count

Examination of a Blood Film can yield a wealth of information including:

Presence of Malaria Parasites

Presence of Hypochromic

Microcytic Cells Characteristic of

Iron Deficiency

Presence of Hypersegmented

Neutrophils and Megaloblasts in

Folate Deficiency

Presence of Sickle Cells in

Haemoglobinopathy Patients

Haemoglobin Electrophoresis

Urinalysis and Urine Microscopy and Culture

Stool Examination for Hookworm Ova Blood

**Commentary**

**Biochemistry Including**

Electrolytes, Urea, Creatinine and Uric Acid Assays; Liver Function Tests  
Serum Ferritin and Red Cell Folate Estimation of Iron Binding Capacity  
Blood Grouping and Coombs Tests (Direct and Indirect) Bone Marrow Aspiration

**Treatment**

Appropriate treatment is necessarily going to be based on what is discovered in the process of investigating the problem in the patient. With malaria being such an important cause of anaemia in pregnancy in this environment, it is probably a wise policy to administer antimalarial drugs to all women with anaemia in pregnancy. Chloroquine, Artemisinin or Sulfadoxine-Pyrimethamine are the most commonly employed options. Chemoprophylaxis thereafter, preferably with proguanil, is essential to protect the woman from further attack and haemolysis. Pyrimethamine resistance has reached such levels in the country now that the level of protection it affords is probably inadequate

**Micronutrient Deficiency**

Dietary deficiency of micronutrients is a major contributor to anaemia in pregnant women. Several factors contribute to this, including inadequate dietary intake, poor absorption from the gastro-intestinal tract and excessive fetal demands, particularly in women with rapid successive pregnancies or those carrying multiple fetuses.

Iron deficiency remains the commonest single deficiency leading to anemia, although it is often found in combination with folate deficiency. Treatment of iron deficiency can be by oral or parenteral administration of iron. Ferrous sulphate, gluconate or fumarate, providing about 60-100 mg of elemental iron daily is required, of which an estimated 10% will be absorbed. Patients tolerate the different compounds in various ways and it is important to find out which compound provokes the least gastrointestinal and other side effects in the patient. Various preparations contain iron in combination with other micronutrients. It is important to ensure that whatever preparation is selected, the patient is ingesting adequate amounts of elemental iron daily.

The indication for parenteral iron therapy is oral intolerance of iron or refractoriness of response in terms of a measurable increase in haematocrit levels. The dose administered is calculated to restore haemoglobin concentrations to normal levels and an additional 50% of that amount is added to replenish the body's iron stores. Ferric hydroxide in an iron-dextran complex dissolved in normal saline is a common preparation used although there are others.

Folate deficiency is often found in association with iron deficiency. Thus majority of anaemic pregnant women

have a combined deficiency. Folate deficiency is easily corrected by administering 5 mg of folic acid orally every day, except in those situations where the woman is unable to tolerate oral preparations because of vomiting or other gastrointestinal side effects. In such a situation, a parenteral preparation has to be obtained. Folate administration is particularly important in patients having excessive destruction of RBCs because the blood formation process in such patients consumes huge amounts of folate every day.

Vitamin B<sub>12</sub> deficiency is not a common cause of pregnancy anaemia here but it is certainly desirable to administer small quantities of it just in case. There are also several other micronutrients that are required in trace amounts for haemopoiesis. Hence specialised preparations that contain the major micronutrients as well as the trace elements are helpful in 'covering all the bases' in the treatment of anaemic pregnant women.

**Excessive Haemolysis**

Treatment of excessive haemolysis is often difficult except in those cases due to malarial parasitaemia where eradication of the parasites deals with the problem. In patients with haemoglobinopathies, treatment usually revolves around prevention of the factors that trigger haemolysis, and blood transfusion when anaemia is severe. Some people have experimented with 'hypertransfusion' but the benefits of such an approach have not been shown to outweigh the risks involved.

In patients with autoimmune haemolysis, repeated transfusions may be required. Corticosteroid therapy to stabilise the membranes of the RBCs has also been used with varying degrees of success. Patients who are G6PD deficient are counselled to avoid the factors that trigger haemolysis.

**Anaemia in Late Pregnancy**

This is a special situation where urgent action is required. The standard approach has been that moderate or severe anaemia after the 36<sup>th</sup> week of gestation should be treated by blood transfusion. Exchange transfusion has in fact been used in the past but has now been abandoned because of its enormous cost in equipment and manpower. The risks associated with blood transfusion in recent times and the fact that it is often misused<sup>5</sup> is however forcing a rethinking of this approach and several investigators are now exploring the possibility of using a combination of parenteral micronutrients, erythropoietin and growth factors to treat such patients.

**Conclusion**

Anaemia is still a major problem in pregnant Nigerian women and imaginative approaches are required to cope with this problem. The hazards of blood transfusion are encouraging the search for newer approaches, especially the use of parenteral micronutrients and erythropoietin to stimulate bone marrow activity.

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