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ANEMIA DURING PREGNANCY AND METHODS OF ITS MANAGEMENT

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Abstract: Anemia during pregnancy is considered a global health and social problem. Dilutional anemia, which is normally observed in pregnancy, is common, and iron deficiency anemia during pregnancy is also widespread, negatively affecting the health of both mother and child. In addition, the contribution of factors causing anemia during pregnancy varies depending on geographical location, dietary practices, and season. Therefore, it is necessary to make an early diagnosis of iron deficiency anemia, distinguish it from physiologic anemia, and find new methods of treatment.

Keywords: Metabolism, Pregnancy, iron deficiency anemia, sickle cell anemia, treatment, diagnosis, megaloblastic anemia, aplastic anemia,

Introduction

Anemia during pregnancy is considered a public health problem, especially in developing countries. During normal pregnancy, plasma volume expands by 40–60%, while red blood cell mass increases by 20–50%. As a result, physiologic anemia ("dilutional anemia") develops, leading to a normal hematocrit value of 30–32%. The World Health Organization (WHO) defines anemia in pregnancy as a hemoglobin (Hb) level of less than 11 g/dL. The prevalence of anemia during pregnancy is 8% in the first trimester, and increases to 12% and 34% in the second and third trimesters, respectively.

Seventy-five percent of non-physiologic anemia cases during pregnancy are associated with iron deficiency. In this condition, additional examinations mainly include determining the levels of serum ferritin, iron, total iron-binding capacity, and transferrin. In a patient with iron deficiency anemia, hemoglobin and hematocrit are low, mean corpuscular volume is low, serum ferritin is low, serum iron is low, transferrin or total iron-binding capacity is high, and iron saturation is low. In the peripheral blood smear or blood slide, small, oval-shaped cells with pale centers are observed. In severe iron deficiency, a decrease in white blood cell count and either an increase or decrease in platelet count may also be noted.

The majority of macrocytic anemias during pregnancy are associated with folate deficiency, while vitamin B12 deficiency occurs at a lower rate. The method of diagnosing megaloblastic anemia is based on identifying megaloblastosis and determining the specific vitamin deficiency by measuring serum vitamin B12 and folic acid levels. Multivitamin and folic acid supplementation reduce placental abruption and recurrent pregnancy loss. The requirement for folate is 50 µg per day in non-pregnant women, but during pregnancy it may increase to at least 150 µg per day.

When the sticky substance inside the bone marrow changes and is unable to produce platelets, white blood cells, or red blood cells, this condition is called aplastic anemia. Although the anemia is often normocytic, mild macrocytosis may occur due to stress erythropoiesis and an

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increase in fetal hemoglobin levels during pregnancy. Aplastic anemia is rare in pregnancy. In some cases, it may mimic idiopathic thrombocytopenia or occur together with it.

Aplastic anemia can lead to maternal death in up to 50% of cases, usually due to hemorrhage or infection, and fetal complications may occur in one-third of cases.

In the treatment of pregnant women with aplastic anemia, blood transfusions to maintain hemoglobin at 7–8 g/dL, keeping the platelet count above 10,000/μL, and the use of growth factors if necessary are considered effective.

Sickle cell anemia (SCA) is an inherited blood disorder caused by a mutation in the sixth amino acid of the β-globin gene. In this condition, red blood cells become rigid and sickle-shaped. The diagnosis is based on the detection of a decreased red blood cell count and the presence of hemoglobin S on hemoglobin electrophoresis.

Pregnancy in women with SCA is considered high-risk due to hemolytic anemia and multiple organ dysfunction. Pregnant women presenting with sickle cell crisis should be hospitalized, with adequate rest and increased fluid intake ensured. For pain management, paracetamol and other nonsteroidal anti-inflammatory drugs are prescribed. If pain is not relieved, narcotic analgesics may be used; however, meperidine is not recommended because of its toxic effects and the risk of seizures.

Accuracy of Hb measurement in pregnant women still debated: Physiological alterations in blood volume and red blood cell mass during pregnancy reduce the reliability of Hb or Hct assays. Hb value and erythrocyte indices, such as MCV and MCH, have low specificity and sensitivity for detection of iron deficiency. Significant changes manifest only in late phases of iron deficiency

Mild anemia is often asymptomatic and can usually be detected during routine hemoglobin testing in pregnancy. However, moderate and severe anemia may present with symptoms such as fatigue, dizziness, easy exhaustion, lethargy, fainting, palpitations, signs of heart failure, and swelling of the legs. In severe cases, if vitamin A deficiency is present, difficulty swallowing or even blindness may occur. Moreover, some of these symptoms may overlap with those commonly experienced during normal pregnancy.

WHO recommends 800ug / day in pregnancy and 600ug / day during lactation period. Eat more green leafy vegetables (palak, maithi, brocoli) and liver and kidneys. Treatment 5mg folic acid / day for > 4 weeks. Response is observed by fall in LDH level in 3-4 days and increase in reticulocyte count in 5-8 days.

Oral iron preparations: Ferrous sulfate, ferrous fumarate, or ferrous gluconate (100–200 mg elemental iron/day). If side effects occur (nausea, constipation) – change the preparation form.

Intravenous iron: if oral iron is not tolerated or in cases of severe anemia. Folic acid should always be added (0.4–5 mg/day).

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