Iron Deficiency Anemia Treatment in Pregnancy

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ABSTRACT

Around 1.5 billion people worldwide, iron deficiency anemia affects about 50% of the anemia cases. Anemia in pregnancy often occurs due to iron deficiency which can affect the condition of both the mother and the fetus. Serum ferritin measurements have the highest sensitivity and specificity for the diagnosis of IDA unless there are underlying inflammatory conditions. In pregnant women, the lower threshold value for hemoglobin (Hb) is <11 g/dL in trimester I and III, and <10.5 g/dL in trimester II. A Hb concentration <10 g/dL indicates clinically significant anemia during the puerperium. Oral iron therapy is given as a first-line treatment for iron deficiency anemia. Although current data are limited, intravenous (IV) iron therapy is an alternative therapy option in patients who do not respond to oral iron therapy, develop side effects, do not adhere to oral iron treatment, have very low Hb concentrations and require immediate transfusion for severe anemia cases. Apart from giving iron, red blood cell transfusion is also an option for treating iron-deficiency anemia in pregnancy.

Key words: Anemia, iron deficiency, pregnancy.

I. INTRODUCTION

Anemia in pregnancy is a condition in which the mother has a hemoglobin level below 11 g% in the first and third trimesters or a hemoglobin level < 10.5 g% in the second trimester [1]. The need for iron in pregnant women increases significantly. This need is influenced by physiological changes in pregnant women and to meet the growing fetus and placenta.

Iron deficiency anemia (IDA) is the most common cause of anemia in pregnancy. Physiological anemia or dilutional anemia in pregnancy is common in healthy pregnant women due to volume expansion to meet the growing needs of the fetus and placenta and is also associated with decreased hematocrit levels. ADB occurs when iron levels in the body are not enough. Serum ferritin levels can be useful in diagnosing IDA in pregnancy [2]. The global prevalence of anemia in pregnancy is estimated at 41.8% [3]. In Indonesia alone, the prevalence of iron deficiency anemia in pregnant women is 50.5% [4].

According to WHO, anemia in pregnancy occurs when the hemoglobin (Hb) concentration drops to <11g/dL with a hematocrit <0.33/L. Anemia in pregnancy causes the same symptoms as anemia in other categories such as easy fatigue, general weakness, decreased energy levels, thought, attention, and concentration. The severity of anemia in pregnancy is determined by the level of hemoglobin [5].

Risk factors for IDA in pregnant women are lack of nutritional intake containing iron, impaired absorption, and short pregnancy intervals [2]. The main signs and symptoms of IDA are fatigue, poor physical and mental abilities, headache, vertigo, leg cramps, pagophagia, cold intolerance, koilonychia, pale mucosa, and stomatitis. IDA during pregnancy causes several maternal and fetal problems. Therefore, the diagnosis and effective treatment of iron deficiency anemia are very important [3].

II. TREATMENT

The need for iron in pregnant women is 1000 mg/day so iron supplementation is needed. Prevention in the moderate risk group that can be done includes adequate nutritional intake and also consuming iron supplementation of 30 mg/day. High-risk groups are recommended to consume 60-100 mg/day [2]. Oral iron supplementation is routinely used for the treatment of IDA in pregnancy. In mild and moderate anemia there are several options for oral iron supplementation, namely, ferrous sulfate, ferrous fumarate, ferrous gluconate, or iron hydroxide polymaltose complex. The advantage of oral medication is that it does not require the assistance of medical personnel in its use. The most common gastrointestinal side effects are nausea, vomiting, and diarrhea which can also affect the duration of treatment [6]. Oral ferrous sulfate (FS; Plastufer®; 100 mg capsule taken twice daily; a total daily dose of iron 200 mg). Oral FS is to be taken daily for 12 weeks.
A. Intravenous Iron Therapy

Intravenous (IV) administration of iron may be considered in pregnant women who do not improve with oral treatment or develop bothersome side effects. IV iron administration is also recommended for pregnant women with severe IDA and requiring rapid intervention. Ferric carboxymaltose (FCM; Ferinject®) is a dextran-free IV iron preparation that allows rapid administration of a single high dose of iron (up to 1000 mg of iron in 15 minutes) once weekly. This FCM has a good tolerance effect on the patient's immune system, serious infections, and post-transfusion reactions. Several social issues can also be associated with barriers to blood transfusion, such as beliefs held by patient population groups, as well as limitations or scarcity of suitable blood supplies for patients. For this reason, blood transfusion can be considered as a last resort if the patient's anemia cannot be controlled or the patient falls in a critical condition [6].

The results of a study showed that IV FCM is effective in treating IDA in pregnancy during the late trimester and pregnant women with this treatment can give birth to healthy babies. The increase in HB with IV FCM treatment was better than oral iron supplementation at week 6 [3].

B. Blood Transfusion

One of the effective treatments for IDA is blood transfusion. Blood transfusions can provide red blood cells without requiring further physiological efforts because blood transfusions do not work by correcting the cause of anemia itself. However, there are many risks associated with blood transfusions, including incorrect transfusion, negative effects on the recipient's immune system, serious infections, and post-transfusion reactions. Several social issues can also be associated with barriers to blood transfusion, such as beliefs held by patient population groups, as well as limitations or scarcity of suitable blood supplies for patients. For this reason, blood transfusion can be considered as a last resort if the patient's anemia cannot be controlled or the patient falls in a critical condition [6].

TABLE: Guidelines for the Management of IDA for Pregnancy in Europe and North America

<table>
<thead>
<tr>
<th>Swiss Society of Obstetrics and Gynecology</th>
<th>The Network of Advancement of Transfusion Alternatives (NATA)</th>
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</thead>
<tbody>
<tr>
<td>• Oral supplementation in patients with mild to moderate anemia</td>
<td>• Oral supplementation in the first and second trimesters.</td>
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<tr>
<td>• Intravenous iron supplementation in patients in the 2-3rd trimester: 1. Unresponsive to oral supplementation</td>
<td>• Consider IV iron supplementation after 14th week of gestation in patients who are unresponsive to oral supplementation (Hb increase &lt;0.5 g/dL at 2 weeks)</td>
</tr>
<tr>
<td>2. Severe iron deficiency anemia</td>
<td>• IV iron supplementation in the third trimester if iron deficiency anemia is present.</td>
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<tr>
<td>3. Other factors that require immediate iron</td>
<td>• If available, perform a serum ferritin test to check for iron availability.</td>
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III. Conclusion

Anemia in pregnancy is the condition of the mother with hemoglobin levels below 11 g% in the first and third trimesters or hemoglobin levels < 10.5 g% in the second trimester. Oral iron supplementation is used routinely for the treatment of IDA in pregnancy. In mild and moderate anemia there are several options for oral iron supplementation, namely, ferrous sulfate, ferrous fumarate, ferrous gluconate, or iron hydroxide polymaltose complex. The advantage of oral medication is that it does not require the assistance of medical personnel in its use. Gastrointestinal side effects that often appear are nausea, vomiting, and diarrhea which can also affect the duration of treatment. Intravenous administration of iron (IV) may be considered in pregnant women who do not improve with oral medication or have bothersome side effects. IV iron administration is also recommended for pregnant women with severe IDA and requiring rapid intervention. Blood transfusion can be considered as a last resort if the patient's anemia cannot be controlled or the patient is unresponsive to parenteral iron supplementation or the patient falls in a critical condition.

CONFLICT OF INTEREST

Authors declare that they do not have any conflict of interest.

REFERENCES