Relationship between Platelet Count in Pregnant Women with Hypertension

Abstract: Pregnancy-induced high blood pressure is one of the most common and life-threatening pregnancy complications. This cross-sectional study aimed to investigate the relationship between platelet count and pregnancy-induced hypertension. 20 samples were collected from pregnant women and patients with blood pressure, where the number of platelets was measured by standard methods and all medical examinations and tests were conducted in Al Majar Alkabir Hospital.

Keywords: Pregnancy, Blood pressure, platelets, PIH.

INTRODUCTION

Blood pressure is the force of blood pushing into the walls of blood vessels, through which it moves during its delivery of all body tissues and organs in what is known as the blood circulation.

If blood pressure was high before pregnancy, then this is chronic hypertension, and it will continue during pregnancy and after childbirth. If blood pressure rises after the twentieth week (20) of pregnancy and ends after childbirth, then this is pregnancy-related hypertension (gestational hypertension). In all cases, high blood pressure poses a risk to the health of the mother and the fetus during pregnancy.

High blood pressure leads to a decrease for blood that reaches the placenta, and thus the amount of oxygen that reaches the child, so the child is not provided with the amount of oxygen and nutrients he needs. Premature labor or the birth of a low-weight baby may occur in women with high blood pressure. If treatment is started early, the pregnancy will continue normally.

Thrombocytopenia is a condition characterized by a low number of platelets in your blood.

Platelets are colorless blood cells that help blood clot. In vascular injuries, platelets stop bleeding by clumping and forming plugs.

A woman's body undergoes many physiological changes during pregnancy, some of which are a result of the development of the fetus's growth in the uterus and the increase in its size, and others are related to wrong daily habits.

And 8% of pregnant women have platelets reduced to less than 150 million per milliliter, a problem that obstetricians and gynecologists call "gestational platelet deficiency", and some women are exposed to it in the last third of pregnancy.

Platelets are one of the main blood components responsible for clotting and preventing bleeding, and their number in a normal person ranges between 150 and 400 million per milliliter. Doctors advise women to regularly conduct blood tests during pregnancy, to check on the number of platelets, especially since their deficiency in the body may not be accompanied by it. Clear warning signs that this problem can be inferred, except in limited cases.

Among the most prominent symptoms of low blood platelets during pregnancy:

1. The emergence of scattered bruises throughout the body
2. A rash in the lower legs.
3. Notice the presence of blood in the urine or stool.
4. Bleeding gums.
5. Vaginal bleeding
It is a dangerous complication that some pregnant women face, it is accompanied by high blood pressure and an increase in protein in the urine, and if preeclampsia is severe, a pregnant woman may develop Hellb syndrome, which is a serious condition that requires immediate childbirth, due to the sharp drop in blood platelets.

The increase in blood volume in the last months of pregnancy leads to the production of 50% more amounts of plasma, which causes a decrease in blood platelets in the body, but they remain able to perform their function, and return to their normal levels immediately after birth, and this condition is known as "symptomatic platelet deficiency.

The lack of platelets in pregnant women is a decrease in the number of platelets to less than 150 x 10^9 / liter, and the lack of platelets in pregnant women occurs in about 7 to 12% of them, especially at the time of childbirth.

Platelets are an important part of blood components, which are produced from the bone marrow, and they remain in the blood for ten days before they are destroyed, and are also responsible for repairing tissue damage, and they have a vital role in the blood clotting system, which helps to stop bleeding and heal wounds (Lo, J. O. et al 2013). Platelet insufficiency is expressed in the presence of blood disorders, and it is not always considered a serious problem, but it affects the ability of the blood to clot, and can lead to severe bleeding in wounds, as the rate of normal platelets ranges between 140,000 to 450,000 per microliter of blood. The number of platelets usually varies in women due to the menstrual cycle, and also varies at the end of the stage of pregnancy when the approaching delivery, and the risk of bleeding increases when the platelets drop to less than 80,000 to 100,000 per microliter of blood.

**As mentioned earlier, the platelets increase.**

Hematology stops bleeding in the body, because it closes any gap that forms in the blood vessels in the body, when the wall of the blood vessel in the body is affected, it emits a group of substances that activate the platelets in the blood, which in turn activates more platelets, and then they A blood clot begins to form at the site of the defect in the blood vessel, and then the bleeding stops.

Platelet deficiency in pregnant women is treated with steroid medicines, which contain some complications that are relative to the pregnant woman and her fetus, but in some cases where the platelet count decreases to a large degree, the antibodies may transfer through the placenta to the fetus and cause thrombocytopenia in him. A splenectomy is performed, but it is advised to avoid this process as much as possible if an alternative is available, and in later cases, it is possible to use some types of immunosuppressive drugs, such as azathioprine, cyclophosphamide and others, but these drugs may cause some serious side effects such as infertility or some benign tumors (Hall, M. E. et al 2011), and the doctor may start treatment by transfusing blood or platelets to the pregnant woman after conducting many tests, and some drugs that cause platelet deficiency, such as heparin, may be changed and replaced with other medicines. The blood plasma of the pregnant woman after some tests. The red blood cell count begins to increase at 8-10 weeks of pregnancy and by the end of pregnancy it increases by 20-30% (250-450 ml) relative to the normal level for non-pregnant women, especially in women who took iron supplements during pregnancy. Among pregnant women who have not taken iron supplements, the red blood cell count can increase by only 15-20%. The lifespan of red blood cells decreases slightly during a normal pregnancy.

The level of erythropoietin increases by 50% in a normal pregnancy and its change depends on the presence of complications of the pregnancy. An increase in plasma erythropoietin increases the number of red blood cells, which partly provides for a high metabolism requirement of oxygen during pregnancy.

In women who do not take iron supplements, the average red blood cell volume decreases during pregnancy and the average in the third trimester is 80-84 fl. However, in healthy pregnant women and pregnant women with moderate iron deficiency, A large increase in plasma volume in relation to an increase in hemoglobin and red blood cell volume leads to a moderate decrease in hemoglobin levels (physiological anemia or low hemoglobin in pregnant women), which has been observed in healthy pregnant women. The biggest difference between the growth rate of blood plasma volume and the number of red blood cells in the mother's bloodstream occurs during the end of the second trimester and the beginning of the third trimester (a decrease in hemoglobin usually occurs at 28-36 weeks of pregnancy).

The hemoglobin concentration increases due to the cessation of the increase in plasma volume and the continuous increase in the amount of hemoglobin. Conversely, the absence of physiological anemia is a risk factor for stillbirth.

It is difficult to establish a clear definition of anemia in pregnant women. It consists of pregnancy-related changes in blood plasma volume and red blood cell count, physiological differences in hemoglobin concentration between women and men, and frequency of iron supplementation during pregnancy.

The CDC defined anemia as less than 110 g / L (less than 33% hematocrit) in the first and third trimesters of
pregnancy and less than 105 g / L (less than 32% hematocrit) in the second trimester.

The World Health Organization has defined anemia in pregnant women as a decrease in hemoglobin less than 110 g / l (11 g / dl) or hematocrit below 6.83 mmol / l or 33%.

Severe pregnancy anemia is determined by a hemoglobin level below 70 g / L and requires medical treatment. Severe anemia is defined as a hemoglobin level less than 40 g / L and requires urgent medical attention due to the risk of congestive heart failure.

Women with hemoglobin values below these levels are considered anemia and should undergo standard tests (complete blood count with peripheral blood smear, reticulocyte count, serum iron, ferritin, and transferrin). If no abnormalities are found during the examination, then hemoglobin reduced to the level of 100 g / L may be considered a physiological anemia with a variety of factors affecting the normal hemoglobin level in a particular person.

Severe chronic anemia is most common in women in developing countries. Maternal hemoglobin drop below 60 g / L causes a decrease in the volume of amniotic fluid, dilated blood vessels in the brain, and altered fetal heart rate. There is also an increased risk of premature labor, miscarriage, low birth weight and stillbirths. In addition, severe anemia (hemoglobin less than 70 g / L) increases the risk of maternal death. There is no evidence that anemia increases the risk of birth defects in a fetus.

Severe chronic anemia is usually associated with insufficient iron stores (due to insufficient food intake or an intestinal worm infestation), and folate deficiency (due to insufficient intake and chronic hemolytic conditions such as malaria). Thus, it is possible to prevent chronic anemia and improve pregnancy outcomes with nutritional supplements and infection control measures.

Transfusion of blood and red blood cells (where safe blood transfusion is available) is considered a reasonably aggressive treatment for severe anemia, especially if there are signs of fetal hypoxia.

Signs of physiological anemia in pregnant women disappear 6 weeks after childbirth, when the plasma volume returns to normal.

**MATERIAL AND METHOD**

20 samples were collected in Al Major Alkabir Hospital in the hematology department and The study consisted of 20 women with high blood pressure and pregnant at the same time The patient group underwent a manual test of the platelet group by using known and standard methods Where one millimeter was withdrawn through each sample, by using a known blood collection system, and through EDTA-ant, diluted blood is obtained from the elbow vein 1% ammonium oxalate, and then this is followed by calculating the number of platelets present.

**Statistical analysis**

Data were collected and the required and appropriate statistical analyzes were made for the results by relying on the SPSS 25 program and the statistical analysis that were studied are

1. MEAN±SD
2. Comparison between parameters
3. P value
4. T value
5. Correlation

**RESULTS**

<table>
<thead>
<tr>
<th>Table.1</th>
<th>V pregnant female- HTA</th>
<th>Non-pregnant woman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platelet</td>
<td>217033±50730.2</td>
<td>37335±234520</td>
</tr>
</tbody>
</table>
**Figure 1** – explained p and t value for platelet

**Table 2** - Explains the relationship between pregnancy and platelets

<table>
<thead>
<tr>
<th></th>
<th>First trimester</th>
<th>Second trimester</th>
<th>Third trimester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platelet Number</td>
<td>107.55±55.2</td>
<td>99.2±61</td>
<td>157.22±67.9</td>
</tr>
<tr>
<td>Number</td>
<td>16</td>
<td>55</td>
<td>28</td>
</tr>
</tbody>
</table>

**Figure 2** - explain table by chart
DISCUSSION

20 pregnant women were examined and had blood pressure disease, where clear data on platelet count were presented. A significantly lower platelet count was observed among pregnant women with PIH compared to control group subjects. An association was found between low platelet counts and PIH at significant levels. It was the mean and standard deviation of the average age of women on whom medical examinations and study were used 25.2±4.4 and mean ±SD for Platelets was explained in table 1 below and about P value was 0.002 as for the value t value was 2.25.
To find out the effect that pregnancy develops on the number of blood platelets, we find that the number of platelets present in the last trimester is higher than expected, and if compared with the second trimester, as shown in Table 2.

**CONCLUSION**

The deficiency of platelets during pregnancy may range from one woman to another greatly, as some women may suffer during pregnancy for a slight decrease in the level of these platelets from the normal limit, and in that case, no remedial action is required, as the level of platelets must be monitored frequently from Before the health care provider, but in cases where there is a significant decrease in its levels, this may be an indication of some disorders.

**REFERENCES**