

Description of Meeting Blood Needs in Negative Rhesus Patients At dr. Zainoel Abidin Aceh

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ABSTRACT

Rhesus has 50 antigens but only five important antigens. Of course, the *Rhesus* blood group system is different from the ABO blood group, the *Rhesus* antibodies are formed if there is exposure, either due to blood transfusions. Or even pregnancy population *Rhesus* positive about 85 percent, and negative *Rhesus* about 15 percent. *Rhesus* tau clumps of erythrocytes occur when a test is carried out with a D antisera. Positive blood that has *Rhesus* antigen is indicated by a positive reaction.

This study was to determine how the blood fulfillment of *Rhesus* negative patients in the dr. Zainoel Abidin Hospital Aceh was This is a descriptive analysis conducted in January-April 2020 at RSUD dr. Zainoel Abidin Aceh. Fulfillment of blood needs in negative *Rhesus* patients is carried out with an overview of blood fulfillment in *Rhesus* negative patients.

Fulfillment of blood needs in *Rhesus* negative patients based on the types of components met was 53 blood pack red cell (PRC) components and 3 bags of fresh frozen plasma (FFP) blood components were not met (38.9%). 2,2%). The fulfillment of blood needs in *Rhesus* negative patients based on the blood group that is fulfilled is blood type O as much as 42 blood bags (30.8%) and those that are not met blood group AB are 25 bags of blood (18.3%). Fulfillment of blood needs in *Rhesus* negative patients based on *Rhesus* that is fulfilled is *Rhesus* positive as much as 14,000 blood bags (100%) and those that are not met *Rhesus* negative are as many as 73 blood bags (53.6 5). Fulfillment of blood needs in *Rhesus* negative patients based on the inpatient room 26 bags of blood (19.1%) were fulfilled in the midwifery inpatient room and 42 bags of blood (30.8%) were not fulfilled.

The study shows that the fulfillment of blood needs in *Rhesus* negative patients is smaller than what is fulfilled at UTD dr. Zainoel Abidin Aceh Hospital in September 2019-April 2020

Keywords: *Rhesus* negative, Meeting Blood Needs, Patients

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BACKGROUND

Rhesus is a very complex blood group system. The Rhesus system is an important blood group after ABO, currently Rhesus has 50 antigens but only five important antigens. Of course, the Rhesus blood group system is different from the ABO blood group, Rhesus antibodies are formed if there is exposure either due to blood transfusion or pregnancy (Mitra et al., 2014).

Individuals who have D antigen on the surface of red blood cells are stated as Rhesus positive while those who do not have D antigen on the surface of red blood cells are stated as Rhesus negative. Rhesus negative blood type is the rarest blood group compared to ABO blood group itself because it is mostly found in Caucasians, it is estimated that it is around 15% of the race while in Indonesia alone there is only 0.1% of the total population. (Dr.rukman Kiswari, 2014).

Rhesus negative is not a disease and is not as dangerous as Rhesus positive. In giving Rhesus negative blood from a donor to the recipient, care must be taken because they cannot accept a donor with a different type of Rhesus, because the Rhesus antigen, especially the D-antigen, has clinical value in the field. blood transfusion. Rhesus antigen can induce the production of alloantibodies which can cause hemolytic transfusion reactions in the recipient or hemolytic disease of the fetus or newborn, (hemolytic disease of newborn, HDN) blood type examination, rhesus blood is important at the time of transfusion, rhesus system is able to cause a transfusion reaction if the Rhesus blood type is misinterpreted, by giving one-time Rhesus positive (D +) blood of approximately 0.1 mL parenterally to individuals who have Rhesus negative blood group (D-), it can cause anti Rhesus positive (anti-D), even though blood type is AB O its the same. (Macro, 2009)

In Indonesia, total blood production in 2014 was 4,644,863 blood bags consisting of 16.18% Whole Blood and 83.82% components. The number of components consists of PRC 58%, fresh plasma 22%, TC 13%, FFP 6%, WE 0.18%, Cryoprecipitate 0.65% and Thromboferesis 0.17% (Ministry of Health RI, 2015)

Every request for blood from a patient's room with negative Rhesus blood often becomes an obstacle to fulfilling blood needs in accordance with the room doctor's request, the first in UTD itself we cannot optimize the donor because the system is still in the application stage of a replacement donor, the lack of information about UTD in the RSUDZA is spread to the wider community, the lack of public knowledge about donors, the computerized system that is still internal, patients who are negative Rhesus often never have blood filled for days. Blood use at the PMI Aceh UTD from 2019 to September is around 2900. While at Dr. Zainoel Hospital Abidin Aceh in a month reached 3000 bags in 2019. PRC is around 50% while the TC component is in second place, which is around 30% and is followed by the FFP component and others.

In an effort to optimize blood services in terms of negative Rhesus blood needs at UTD dr.zainoel Abidin Aceh Hospital, therefore there must be data, or constant negative Rhesus blood donors to minimize the shortage of negative Rhesus blood stock in dr.Zainoel Abidin Aceh Hospital.

Based on the initial survey data documentation monthly request for negative Rhesus patient blood at the dr. Zainoel Abidin Aceh Hospital, the blood request in June 2019 was 4 patients with 6 bags.

METHODS

In this study, the researcher used a descriptive method, which is a study that provides a systematic description based on literature or related documents obtained directly by examining a minimum number of samples, presenting actual and accurate reporting in the form of a secondary data analysis report of a number of negative Rhesus blood requests in UTD RSUD Dr. Zainoel Abidin Aceh. The study was aimed at obtaining data regarding the fulfillment of blood needs in rhesus negative patients at UTD RSUD Dr. Zainoel Abidin Aceh 2020.

The data and information collection techniques carried out by researchers in the preparation of scientific papers, namely by collecting secondary data. Secondary data were collected by documenting the request form for blood transfusion from the inpatient room or checklist by researchers from the object of meeting the blood needs of negative Rhesus patients during 2020.

RESULT

Patient Characteristics

1. Patient characteristics based on the type of blood components

Table 4.1 fulfillment of blood needs in negative Rhesus patients based on the type of blood components at UTD RSUD dr. Zainoel Abidin Aceh from September 2019 to April 2020.

| Type of component | Fulfilled | Percentage (%) |
|-------------------|-----------|----------------|
| PRC | 53 | 38,9 |
| TC | 10 | 7,3 |
| FFP | 0 | 0 |
| Amount | 63 | 46,2 |

Based on Table 4.1, it can be seen that the use of blood components that are fulfilled is the blood pack red cell (PRC) component of 53 bags (38.9%) Table 4.2 Fulfillment of blood needs in Rhesus negative patients based on the type of blood components at UTD RSUD dr. Zainoel Abidin Aceh from September 2019 to April 2020.

| Type of component | Not Fulfilled | Percentage (%) |
|-------------------|---------------|----------------|
| PRC | 70 | 51,4 |
| TC | 0 | 0 |
| FFP | 3 | 2,2 |
| Amount | 73 | 53,6 |

Based on table 4.2, it can be seen that the use of blood components that are not fulfilled is the red cell pack (PRC) of 70 blood bags (51.4%)

2. Patient Characteristics based on Blood Type

Table 4.3 Fulfillment of blood needs in negative Rhesus patients based on blood type at UTD RSUD dr. Zainoel Abidin Aceh from September 2019 to April 2020)

| Blood type | Fulfilled | Percentage (%) |
|---------------|-----------|----------------|
| A | 12 | 8,8 |
| B | 6 | 4,4 |
| O | 42 | 30,8 |
| AB | 3 | 2,2 |
| Amount | 63 | 46,2 |

Based on Table 4.3, it can be seen that the blood group that is met is blood type O as much as 42 blood bags (30.8%)

Table 4.4 fulfillment of blood needs in negative Rhesus patients based on blood group at UTD RSUD dr. Zainoel Abidin Aceh from September 2019 to April 2020

| Blood type | Not Fulfilled | Percentage (%) |
|---------------|---------------|----------------|
| A | 11 | 8,0 |
| B | 19 | 13,9 |
| O | 18 | 13,2 |
| AB | 25 | 18,3 |
| Amount | 73 | 53,4 |

Based on Table 4.4, it can be seen that the patient's blood group that is not met is AB blood group as many as 25 blood bags (18.3%).

3. Patient Characteristics based on Rhesus

Table 4.5 fulfillment of blood needs in Rhesus negative patients based on Rhesus at UTD RSUD dr. Zainoel Abidin Aceh from September 2019 to April 2020)

| Rhesus | Fulfilled | Percentage (%) |
|------------------------|-----------|----------------|
| Rhesus Positive | 0 | 0 |
| Rhesus Negative | 63 | 46,3 |
| Amount | 63 | 46,3 |

Based on Table 4.5, it can be seen that Rhesus that is fulfilled is Rhesus negative as much as 63 bags of blood (46.3%)

Table 4.6 the fulfillment of blood needs in Rhesus negative patients based on Rhesus at UTD RSUD dr. Zainoel Abidin Aceh from September 2019 to April 2020

| Rhesus | Not Fulfilled | Persentase (%) |
|------------------------|---------------|----------------|
| Rhesus Positive | 0 | 0 |
| Rhesus Negative | 73 | 53,6 |
| Amount | 73 | 53,6 |

Based on Table 4.6, it can be seen that Rhesus that is not fulfilled is Rhesus negative as many as 73 bags of blood (53.6%)

4. Patient characteristics based on the ward room

Table 4.7 the fulfillment of blood needs in negative Rhesus patients based on the ward at UTD RSUD dr. Zainoel Abidin Aceh from September 2019 to April 2020).

| Ward | Fulfilled | Percentage (%) |
|-------------------------|-----------|----------------|
| Internal disease | 18 | 13,2 |
| Thalesemia | 9 | 6,6 |
| Hademolisa | 7 | 5,1 |
| Midwifery | 26 | 19,1 |
| Cardiac surgery | 3 | 2,2 |
| Pediatric surgery | 0 | 0 |
| I gd | 0 | 0 |
| T ht | 0 | 0 |
| Icu | 0 | 0 |
| Poly | 0 | 0 |
| Lungs | 0 | 0 |
| Amount | 63 | 46,2 |

Based on Table 4.7, it can be seen that the use of blood needs in the inpatient room that is fulfilled is the obstetric inpatient room as many as 26 bags of blood (19.1%)

Table 4.8 fulfillment of blood needs in negative Rhesus patients based on the ward at UTD RSUD dr. Zainoel Abidin Aceh from September 2019 to April 2020

| Ward | Not Fulfilled | Percentage (%) |
|-------------------------|---------------|----------------|
| Internal disease | 42 | 30,8 |
| Thalesemia | 5 | 3,5 |
| Hademolisa | 12 | 8,8 |
| Midwifery | 4 | 2,9 |
| Cardiac surgery | 4 | 2,9 |
| Pediatric surgery | 0 | 0 |
| I gd | 0 | 0 |
| T ht | 0 | 0 |
| Icu | 6 | 4,4 |
| Poly | 0 | 0 |
| Lungs | 0 | 0 |
| Amount | 73 | 53,3 |

Based on Table 4.8, it can be seen that the use of blood needs in the ward that is not fulfilled is the internal disease ward as many as 42 blood bags (30.8%)

DISCUSSION

Based on tables 4.1 and 4.2, the results showed that most of the blood components that were fulfilled were packed red cell components, as many as 53 blood bags (38.9%). And what was not fulfilled were the components of packed red cell blood as well as 70 blood bags (38.9%) and fresh frozen plasma (FFP) as many as 3 bags of blood (2.2%). Researchers only look for the use of blood that is fulfilled and that is not fulfilled in Rhesus negative patients

Based on the theory, the packed red cell blood component is a component consisting of concentrated erythrocytes by separating other components, so that it reaches a hematocrit of 65.70%, which means that 125-150 ml of plasma has disappeared from the unit. The use of packed red cell blood components to increase the patient's hemoglobin without increasing blood volume significantly, the advantages of using packed red cells over other blood

component products, for the increase in hemoglobin to be adjusted as desired, reducing the possibility of disease transmission and immunological reactions, the blood volume given is more. Less chance of overload is reduced, the use of packed red cell products in anemic patients who are not accompanied by blood volume, for example, patients with hemolytic anemia, hypoplastic anemia, chronic, acute leukemia, chronic leukemia, malignancy, thalassemia, chronic renal failure, packed red cell is given to the sign lost oxygen need, usually at hemoglobin 8-10 g / dl. (EA Viveronika, 2017).

Fresh frozen plasma (FFP) is a blood product that is processed from whole blood which contains solid blood plasma components of albumin blood clotting factor, immunoglobulin, and factor VII clotting factor in cases of bleeding.

According to the opinion obtained by researchers, the administration of packed red cell and fresh frozen plasma (FFP) blood components still has many risks, such as mild, moderate, and severe transfusion reactions that can occur in patients. During the administration of packed red cell blood components Fresh frozen plasma (FFP), fluid balance is not monitored, there can be a buildup of fluid in the blood vessels which will burden the work of the heart and kidneys. The fulfillment of blood needs in negative Rhesus patients is due to the lack of donors who donate negative Rhesus blood at the UTD RSUD dr. Zainoel Abidin Aceh. The high demand for blood, the lack of blood stock at UTD, is one of the obstacles to fulfilling the blood supply.

Based on tables 4.3 and 4.4, the results of the study show that most of the blood types that are met are O as many as 42 blood bags (30.8%). And those that are not met Blood type AB are 25 bags of blood (18.3%)

Based on the theory that blood type O is the only type of blood group that does not have an antigen, this makes blood type O less likely to cause blood transfusion reactions. Blood type O is the most common blood type in the world, and blood type O is also known as the Universal blood type because it can enter all other blood types. Blood group antigens are inherited from the parents, which means that these blood groups are passed down from generation to generation. Humans have 23 pairs of chromosomes consisting of 22 pairs of autosomal chromosomes and one pair of sex chromosomes. The blood group system was first discovered by Karl Landstainer who was tested at the beginning of a blood transfusion. This group system is called the ABO blood group system. This blood type corresponds to the type of antigen present on the surface of the red blood cells. The ABO blood group has three antigens, namely A antigen, B antigen, and H antigen, which can be easily detected at five to six weeks of pregnancy and fully developed from children up to two to four years (Merizka, 2016).

According to the opinion obtained by researchers about blood type O women with blood type O are more at risk of developing fertility problems than men, which shows that on average women with blood type O have more FSH hormone than women with other blood types. High FSH levels can cause the number of spare eggs in the uterus to be less, making it difficult to get pregnant and blood type O has a lot of protein that is lower in helping blood clot and uses more blood than other blood groups.

Based on tables 4.5 and 4.6, the results show that most of the Rhesus patients who were met were Rhesus negative as many as 63 blood bags (46.2%) for 7 months and those whose blood needs were not met was Rhesus negative as well as 73 blood bags around (53.6%)). Of the total 69 patients with 136 blood bags.

Based on the theory of negative ABO Rhesus blood, which is no less important in the field of blood transfusion. Rhesus blood is a very complex system of blood groups. currently Rhesus contains 50 antigens but only five antigens are important. Of course Rhesus is

different from the ABO blood group, in which Rhesus antibodies are formed if there is exposure either due to blood transfusions or the rarest negative Rhesus pregnancy is only found in the Caucasian race, estimated to be around 15% of the race, while in Indonesia alone it is only 0.1% of the total population. (Mitra et al, 2014).

In the opinion of a Rhesus negative blood researcher, it is not only risky if you have to undergo a blood transfusion, but you must also be careful in choosing a prospective partner, because a husband and wife who are different Rhesus will find it difficult to get offspring as in this case if the mother has ABO Rhesus negative blood type. whereas if you have ABO positive blood type, it is possible that your child will be Rhesus positive, which is dangerous, the incompatibility of the mother's Rhesus with the fetus will make the mother's body fight and respond to blood cells with D antigen, in the fetus it is considered foreign objects must be destroyed like viruses or bacteria, the mother's body will produce antibodies that will attack the red blood cells of the future baby as a result of death or make the baby born with various diseases such as jaundice, anemia, swelling of the liver, brain damage, and heart failure.

Based on tables 4.7 and 4.8, the results of the study showed that blood consumption was mostly fulfilled in the midwifery room, as many as 26 bags of blood (19.1%). And those not fulfilled in the internal disease ward were 42 bags of blood (30.8%).

Based on the theory of distribution of blood to the ward after the blood is checked and a match is found from the results of the crossmatch or a matched cross test, the blood will be distributed to the patient, blood delivery is carried out by cold chain. The use of blood in the midwifery room is often fulfilled due to the low demand for blood from the treating doctor. The midwifery ward is a room that treats patients who are not patients with diseases but rather a room for childbirth, most of whom come to visit patients who are in a state of childbirth. And the demand for blood is also very low and not routine like other rooms except for patients who give birth due to bleeding alone.

According to the opinion, the use of blood in the midwifery inpatient room is not necessary because the patient's hemoglobin level is still at a normal level, the blood request submitted to the UTD RSUD Dr. Zainoel Abidin Aceh is only for preparation for labor, or as a hospital procedure which must be carried out by the DPJP doctor who treats it at any time. needed.

CONCLUSION

Meeting the blood needs of Rhesus negative patients based on type The components that were fulfilled were the packed red cell (PRC) blood components totaling 53 blood bags (38.9%) and those which were not fulfilled the packed red cell blood components were 70 blood bags (51.4%). And the blood component of fresh frozen plasma (FFP) is not fulfilled by 3 blood bags (2.2%).

Fulfillment of blood needs in Rhesus negative patients based on Blood type that is fulfilled is blood type O as much as 42 bags of blood (30.8%) and blood group that is not met is blood group AB as much as 25 bags of blood (18.3%).

fulfillment of blood needs in Rhesus negative patients based on Rhesus negative were 63 blood bags (46.3%) and Rhesus negative ones were 73 blood bags (53.6).

Fulfillment of blood needs in Rhesus negative patients based on 26 bags of blood (19.1%) were fulfilled inpatient rooms and 42 bags of blood (30.8%) were not fulfilled.

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