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**Paper: Blood Banking**

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**Question 1:**

**Answer:**

**Rh Antigen:**

The second blood group system after abo the most important is Rh blood group system.

The Rh antigen present on the surface of the RBC. 49 antigen present in Rh system. The 5 antigen are most important D, d, C, c, E. in this 5 antigen the D is most important due to the D antigen is more immunogenic. The D antigen present on the RBC we say the Rh positive.

**Rh Antibodies:**

Rh antibody they are immune type antibody. Before the antigen exposure present in the body in active form. After immunization they develop or active in the body.

The Rh negative person to transfer the Rh positive blood. The body make antibodies against the Rh antigen.

**What reason after the compatible blood transfusion cause fetal death and RBC destruction?**

Reaction occur between the Rh antigen and Rh antibody or exposure of Rh antigen the body make Rh antibody against the Rh antigen. Rh antibodies can cause hemolytic transfusion reaction, hemolytic decease, during pregnancy can cause hemolysis in new born.

A pregnant women needed a blood transfusion during pregnancy. The husband transfused the ABO compatible blood to women. After transfusion reaction occur. Due to the pregnant women Rh negative and husband Rh positive reaction occur in women.

**Why fetus death cause or destruction the fetus RBC:**

A pregnant women Rh negative and the fetus inheritance from father Rh positive. It condition the D antigen and D antibody incompatibility it is called Rh decease or hemolytic decease occur in new born.

Sensitization the Rh D antigen from the fetus to mother may lead to the production of maternal (IgG) anti-D antibody. Rh antibody protein in nature. They easily cross the placenta destruction the fetus RBC cause hemolysis in new born. After hemolysis occur fetus death.

**Question2: Explain the concept of single donor and random donor platelet?**

**Answer:**

1**: Random donor platelet:**

When whole blood processed remove the platelet bag from the blood it is known as random platelet donor.

OR

The platelet prepared from the whole blood transfer into single bag it is called single donor platelet.

The whole blood centrifugation (at low G force within four hours) after donation. Platelet rich plasma are separated from red blood cell. Then centrifuged platelet rich plasma (at higher G force) the supernatant layer is removed. Remain only platelet concentration.

1. Platelet are stored at room temperature 22 to 24 degree centigrade.
2. Volume 500 ml
3. One unit of platelet increase 5000 thousand to 10 thousand ul.
4. Shelf life 5 days

2: **Single donor platelet:**

Only platelet remove from a donor by a process is called apheresis machine. Apheresis is a type of machine it separate the blood different component on the basis of density. This machine separate the platelet from a donor blood.

The platelet collect from a special bag inside apheresis machine. The remaining component return to the donor body. This cycle repeated 6 to 8 time the whole process complete 60 to 90 minute. 400 and 500 ml blood are processed in 2 hours.

1. 300 ml platelet are obtained in one donor.
2. SDP are more potent the random donor platelet.
3. Temperature same to the random donor 22 to 24 degree centigrade
4. Shelf life 5 days.

**Question: 3 solve the following table?**

**Answer:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Reaction of cell Tested with** | | **Reaction of serum Tested against** | | **ABO Group** |
| Anti-A | Anti-B | A Cell | B Cell |
| 1 | 0 | 0 | + | + | 0 |
| 2 | + | 0 | 0 | + | A |
| 3 | 0 | + | + | 0 | B |
| 4 | + | + | 0 | 0 | AB |