**Q1.**

**Case study:** The reason behind the condition is Rh incompatibility or Hemolytic disease of newborn, the matter here is that the lady Caroline is Rh negative and her husband Joseph is Rh positive while the offspring of this couple is Rh positive that is an inherit character from his father, when the blood of child mix with the mother’s blood the mother’s immune system produces anti-D IgG agglutinins, these antibodies in second pregnancy about 3% and in third pregnancy about 10% increased fetal death frequency, however increases subsequently in pregnancy enter through placenta that causes hemolysis of child’s RBCs leads to baby’s death. The adverse reaction of wife blood while during transfusion from her husband ensure the Rh incompatibility and baby’s death.

**Q2.**

**Random donor platelets:** RDP concentrate prepared from unit of blood collected from one donor upto 50 ml, each unit elevate platelet count 5000-100000 µl.

Thrombocytes concentrated blood are choose for RDP, RDP are prepared from blood donated within 4-6 hrs of collection and composed of 5.5×1010plateletsstored at 20-24 0C with continuous agitation suspended in 55-65 ml plasma.

The shelf life of RDP is 5 days.

**Single Donor Platelets:** The single donor platelets are collected by apheresis machine, 300ml platelets are taken from just one donor.

Through this technique many patients are treated from one donor

SDP are more valuable than RDP

One unit of SDP is equal to 6-8 unit of RDP

Shelf life is 5 days.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Reaction of cells tested with** | | **Reaction of serum tested against** | | **ABO blood group** |
|  | **Anti-A** | **Anti-B** | **A Cells** | **B Cells** |  |
| 1 | 0 | 0 | + | + | **O** |
| 2 | + | 0 | 0 | + | **A** |
| 3 | 0 | + | + | 0 | **B** |
| 4 | + | + | 0 | 0 | **AB** |

Q3.

**Interpretation:** According to Landsteiner law if an antigen on RBCs surface is present the corresponding antibody must be absent and if antibody is present in the serum the corresponding antigen must be absent.

***Case 1:*** The agglutination is not occur by using forward method that indicates the absence of both antigens on patient’s RBS surface while using reverse method agglutination occur that indicates the presence of both antibodies in the patient’s serum. The result shows that Blood group “**O**”.

***Case******2***: The agglutination shows the presence of A antigen by forward method and in the reverse method agglutination shows the presence of B antibody, so the result indicates that the blood group is “**A**”.

***Case 3:*** The agglutination shows the presence of B antigen by forward method and in the reverse method agglutination shows the presence of A antibody, so the result indicates that the blood group is “**B**”.

***Case 4:*** The agglutination is occur by using forward method that indicates the presence of both antigens on patient’s RBS surface while using reverse method agglutination is not occur that indicates the absence of both antibodies in the patient’s serum. The result shows that Blood group “**AB**”.