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Short Communication

Considering Current Obstacles and Dilemmas of Medical Treatment Associated With Sickle Cell Disorder

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DESCRIPTION

Sickle Cell Disease (SCD) is a genetic disorder that affects the shape and function of Red Blood Cells (RBCs). People with SCD have abnormal hemoglobin, a protein that carries oxygen in the blood. This causes the RBCs to become rigid and sticky, and to form crescent or sickle shapes. These sickled RBCs can block blood vessels, reduce oxygen delivery, and cause damage to various organs. SCD can also lead to chronic anemia, recurrent pain episodes, infections, stroke, and other complications [1].

Blood transfusion is a common and effective treatment for some of the acute and chronic complications of SCD. Transfusion therapy aims to increase the oxygen-carrying capacity of the blood and to reduce the proportion of sickled RBCs. Transfusion can be done by simple transfusion, which involves adding donor RBCs to the patient's blood, or by exchange transfusion, which involves removing some of the patient's blood and replacing it with donor RBCs. Exchange transfusion can be done manually or by using an automated device [2].

Blood transfusion can be used for various indications in SCD, such as preventing or treating stroke, Acute Chest Syndrome (ACS), severe anemia, priapism, splenic sequestration, and other emergencies. Transfusion can also be used for prophylaxis before surgery or during pregnancy, or for long-term disease modification in patients with severe SCD. However, the evidence for some of these indications is limited or conflicting, and the optimal transfusion strategy may vary depending on the individual patient's condition and preference [3].

Blood transfusion is not without risks and challenges for patients with SCD. One of the major complications of transfusion is alloimmunization, which occurs when the patient develops antibodies against foreign antigens on the donor RBCs. Alloimmunization can lead to hemolytic transfusion reactions, delayed hemolytic transfusion reactions, or difficulty in finding compatible blood units for future transfusions. Patients with SCD are more prone to alloimmunization than other transfusion recipients because they often have multiple transfusions and because they may have genetic differences in their RBC antigens compared to the general donor population [4].

Another complication of transfusion is iron overload, which results from the accumulation of excess iron in the body due to repeated transfusions. Iron overload can cause damage to vital organs such as the liver, heart, and endocrine glands. Iron overload can be prevented or treated by using iron chelation therapy, which involves taking medications that bind to iron and help remove it from the body. However, iron chelation therapy has its own side effects and challenges, such as adherence, cost, availability, and monitoring [5].

Other potential complications of transfusion include infections, allergic reactions, volume overload, hyper viscosity, graft-*versus*-host disease, and transfusion-associated circulatory overload.

CONCLUSION

These complications can be minimized by using appropriate screening, testing, matching, and monitoring procedures for blood donors and recipients. In summary, blood transfusion is a valuable therapeutic option for patients with SCD who suffer from various acute and chronic complications of their disease. However, blood transfusion also poses significant challenges and risks for these patients, such as alloimmunization and iron overload. Therefore, blood transfusion should be used judiciously and with careful consideration of the benefits and harms for each individual patient.

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