

BLOOD TRANSFUSION

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This article analyzes the theoretical foundations, clinical significance of the blood transfusion process and the modern approaches used in its implementation. The main instructions for blood transfusion, its types and effects on the patient's body are covered in detail. The donation system, blood component separation and storage processes, and complications associated with transfusion and their prevention measures are also discussed. The article emphasizes the importance of strict adherence to medical protocols in ensuring safe and effective blood transfusions. The results obtained will serve to optimize blood transfusion in clinical practice and increase patient safety.

Introduction. In modern medical practice, blood transfusion is one of the most important life-saving procedures. In cases of various injuries, surgical procedures, hematological diseases, and severe blood loss, it becomes necessary to transfuse blood and its components to the patient. Therefore, blood transfusion is considered not only a treatment method, but also an inevitable medical intervention in many clinical situations. The process of blood transfusion is associated with complex biological and immunological mechanisms, and its proper organization requires a high level of skill and caution. Determining compatibility between donor and recipient, taking into account blood types and Rh factor, as well as reducing infectious risks, are integral parts of this process. Improperly performed transfusions

can lead to serious complications, even death. In recent years, significant scientific and technological advances have been made in the field of blood transfusion. In particular, the use of individual blood components instead of whole blood, the strengthening of safety standards, and the improvement of the donation system have expanded the possibilities for improving the effectiveness of treatment. However, reducing the risks associated with transfusion and ensuring patient safety remain pressing issues. The purpose of this article is to analyze the theoretical foundations of blood transfusion, its clinical significance, and modern approaches to its implementation.

Main part Blood transfusion is a treatment method that involves the administration of donor blood or its components into the recipient's body, and it has significant therapeutic value in many clinical situations. In practice, whole blood transfusions are little used and mainly hemocomponents such as erythrocyte mass, plasma, platelets are used. This approach makes it possible to carry out treatment purposefully and efficiently. Indications for transfusion are determined by various factors. Acute blood loss, severe anemia, hemorrhagic shock, burns, surgical procedures, and some hematological diseases are among the main conditions requiring blood transfusions. The need for transfusion is assessed individually for each patient and a decision is made based on clinical indicators. Determining compatibility between donor and recipient is an important step in the blood transfusion process. Compatibility is checked according to the ABO system and Rh factor, and a biological test is performed. These measures serve to prevent immunological incompatibilities. In addition, screening of donor blood for infectious diseases (viral hepatitis, HIV, etc.) is an indispensable requirement of modern transfusion medicine. The process of preparing and storing blood components is also important. Using special technologies, blood is separated into fractions and stored at specified temperatures and conditions. This allows them to maintain their biological properties and ensure their effectiveness. The shelf life and application instructions of each component are clearly defined. However, blood transfusions can be accompanied by certain complications. These include allergic reactions, hemolytic reactions, fever, and, in rare cases, infectious complications. To prevent such cases, it is necessary to follow strict protocols by medical personnel, constant monitoring of the patient's condition. Currently, new approaches aimed at increasing safety are widely being introduced in the practice of blood transfusion. These include autotransfusion (using the patient's own blood), leukocyte-depleted components, and modern filtration methods. These methods help reduce the risks associated with transfusion.

Conclusion Blood transfusion is widely used in modern medical practice as one of the most important diagnostic and therapeutic methods. It is decisive in maintaining patient life in severe clinical cases, in particular in large-scale blood loss, anemia and hematological diseases. The effectiveness of this process directly depends on the correct determination of compatibility between the donor and the recipient, the rational use of blood components, and strict adherence to established medical protocols. Analyses show that the risk of complications can be significantly reduced by organizing blood transfusions based on modern approaches, in particular, by using component therapy and strengthening safety measures. At the same time, the development of the donor system, the quality preparation and storage of blood products, and the improvement of the skills of medical personnel remain one of the priorities of this area. In conclusion, the implementation of blood transfusions based on scientific principles and individualized approaches will ensure patient safety and improve treatment effectiveness

References

1. Ministry of Health of the Republic of Uzbekistan. Clinical protocols for the use of blood and its components. – Tashkent, 2022.
2. World Health Organization. Blood Transfusion Safety. – Geneva: WHO Press, 2021.
3. .Harmening D.M. Modern Blood Banking and Transfusion Practices. – 7th ed. – Philadelphia: F.A. Davis Company, 2019.
4. .Klein H.G., Anstee D.J. Mollison's Blood Transfusion in Clinical Medicine. – 12th ed. – Oxford: Wiley-Blackwell, 2014.
5. .AABB (American Association of Blood Banks). Standards for Blood Banks and Transfusion Services. – 32nd ed. – Bethesda, 2020.
6. .Roberts D.J., Field S., Delaney M. Transfusion medicine: current challenges and future directions // The Lancet. – 2021. – Vol. 398. – P. 1757–1767.
7. .Murphy M.F., Pamphilon D.H. Practical Transfusion Medicine. – 5th ed. – Wiley-Blackwell, 2017.
8. .Yuldashev B.T., Karimov Sh.I. Fundamentals of Hematology and Blood Transfusion. – Tashkent: Medical Publishing House, 2020.