

Basics Of Infectious Safety In Blood Transfusion

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Abstract. The scientific and practical problems of procurement of donor blood, processing, laboratory testing, ensuring the safety of blood transfusion, prevention of post-transfusion reactions and complications are one of the important directions of medicine - the field of activity of transfusiology. One of the foundations of transfusiology, which allows to ensure the maximum efficiency and safety of blood transfusion, is component hemotherapy - a therapeutic method of introducing components and drugs taken from the blood of donors into the patient's bloodstream.

INTRODUCTION

Transfusiology was formed as an independent scientific discipline by the end of the 70s. This field of activity, which is one of the rapidly developing areas of medicine, covers issues related to the study, development, production of blood components and clinical use of infusion-transfusion guides.

Transfusiology is the science of controlling body functions by targeting the morphological composition and physiological properties of the blood and extracellular fluid system using parenteral administration of organic and inorganic transfusion agents.

AA Ragimov gave the following definition: "Transfusiology is a branch of medicine that studies the possibilities of controlling the body's homeostasis by influencing the blood system with the help and methods of transfusion". The first

definition describes transfusiology mainly as a scientific field, and the second as a medical field.

In practice, transfusiology solves the following tasks: development of means and methods of controlling the body's functions by direct influence on all organs and tissues of the body through the blood system, clinical application, blood organization and optimization of service.

Modern transfusiology considers a number of issues: the preparation of donor blood, its processing into components, drugs, reagents, providing transfusion support to all recipients in clinical practice, hemotherapy, vascular and extravascular procedures, parenteral nutrition and others.

Transfusionology has come a long way in its development from the beginning of the 20th century, from direct blood transfusion to its

preservation and transition to structural hemotherapy in the 70s and 90s.

The first period before 1901 - empirical, the second period from 1901 to 1980, the third period from 1980 - 2000 blood transfusion of components and the fourth period from 2000 to now.

After K. Landsteiner discovered the blood groups of the ABO system in the first half of the 20th century, the main researches are related to the determination of various group characteristics of peripheral blood cells - erythrocytes, lymphocytes, leukocytes and plasma factors. This period of 65-70 years is characterized by the rapid development of immunohematology, the science of group properties of blood.

The First World War was a strong motivating factor for the development of transfusiology and the implementation of its achievements. A large number of wounded, the need to replenish blood losses in the immediate vicinity of combat operations, demanded a detailed study of blood transfusion problems not only in peacetime, but also in the field.

The discovery of AA Bogdanov at the world's first blood transfusion institute in Moscow in 1926 played an important role in the development of transfusion medicine. Blood transfusion institutes in Kharkov in 1930 and in Leningrad in 1932 became strong scientific, methodological and organizational centers of blood service.

During World War II, the widespread use of blood transfusions and blood substitutes saved millions of lives. At the same time, the development and improvement of blood service activities continued.

By the end of the forties, the blood service in our country took the form of many institutions, united by general instructions, manuals, uniform

equipment and administrative control by health authorities.

After World War II, with the development of blood storage and fractionation methods, approaches to blood transfusions have changed. By the mid-70s and later in the next 20-25 years, the concept of component chemotherapy was promoted in almost all countries. Instead of blood transfusion from whole preserved blood, it was recommended to replace the missing structural and functional components - erythrocytes, platelets, plasma, leukocytes, etc., previously taken from donor blood. The most important stage was the production and implementation of monoclonal reagents.

In the mid-80s of the last century, the Council of Europe developed a regulation on a new medical specialty - transfusiology and transfusion medicine specialist. In 1997, transfusiology was included in the nomenclature of medical and pharmacological specialties.

By the end of the third period, the main departments of transfusion medicine were clearly defined with their tasks: clinical transfusion, transfusion immunology, industrial transfusion and blood service.

At all stages of development, one of the main tasks faced by specialists in the field of transfusion medicine was the problem of ensuring maximum safety of blood collection for donors and transfusion of blood to recipients. At the current stage, there are risks of blood transfusion, which require the attention and joint efforts of blood service specialists and transfusion specialists: incompatibility of donor and recipient blood groups, bacterial and viral infections, and complications related to immunomodulation after allogeneic blood transfusion.

According to the Food and Drug Administration (FDA) Biologics Evaluation and Research (USA),

from 1999 to 2001, the three leading causes of death were post-transfusion complications: bacterial contamination of blood components (15.4%), acute hemolytic reactions (14.3%) and acute pulmonary complications (12.7%).

In this regard, improvement of the complex laboratory safety system at all stages of blood transfusion therapy preparation and delivery remains relevant.

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