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DEVELOPMENT OF NEW TYPES OF DRUGS: BIOLOGICALS AND GENETIC THERAPIES

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ABOUT ARTICLE

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Abstract: This text examines biologics and genetic therapies as innovative treatments for various diseases. The benefits of these methods, such as personalized medicine and increased treatment effectiveness, are discussed, as well as possible concerns associated with their use. Attention is paid to unknown side effects, individual sensitivity of patients, ethical issues and availability of drugs. The importance of a balanced approach to the development and application of new technologies in medicine is emphasized.

INTRODUCTION

In the world of medicine and pharmacology, innovations and discoveries in the field of drug development are constantly occurring. One of the most pressing areas is the creation of new types of drugs, such as biological drugs and genetic therapies. These modern treatment approaches have the potential to revolutionize medical practice and help patients with a variety of diseases.

Biologics: Biologics are medications made from living organisms or parts of living organisms, such as bacteria, viruses, or cells. They are different from traditional chemical drugs and are used to treat a wide range of diseases, including cancer, immune disorders, and rare genetic diseases. Recent research and development in this area has led to the creation of effective biological drugs that improve the quality of life of patients and increase their survival. For example, monoclonal antibodies such as PD-1 and PD-L1 blocker therapy have become key drugs in the treatment of various types of cancer.

Gene Therapies: Gene therapies are a new form of treatment aimed at correcting genetic defects responsible for developing certain diseases. These innovative methods include the use of gene therapy, genome editing using CRISPR-Cas9 technology, and cell therapy. In recent years, genetic therapies have gained widespread acceptance and application in the treatment of many diseases such as cystic fibrosis, cystic fibrosis, spinal muscular atrophy, and hemophilia.

In the world of pharmacotherapy, the latest developments in biologics and genetic therapies continue to amaze us with their results. New genetic therapies have recently been approved for several rare genetic diseases, as well as biologics for treating autoimmune diseases. One of the most significant recent advances is the development of gene therapy for treating hemoglobinopathies such as beta-thalassemia and cycle anemia.

Concerns regarding biologics and genetic therapies are an important aspect to consider when developing and implementing these innovative treatments. Some of the potential hazards include the following:

1. Unknown Side Effects: Because biologics and genetic therapies are relatively new treatments, all side effects may not be fully known at the time of use. This may pose a risk to patients, especially if the adverse effects are severe or long-term.

2. Individual sensitivity: Patient response to biological drugs and genetic therapies may vary depending on genetic characteristics or immune status. This may increase the risk of allergic reactions or complications.

3. Ethical Issues: The use of genetic therapy, especially when interfering with the human genome, raises ethical questions regarding changes in genetic information, heredity and possible consequences for future generations. These aspects need to be carefully considered and discussed with society and the profession.

4. Affordability and Finance: Biologics and genetic therapies often have high costs due to the complexity of production and development. This may create accessibility problems for the general population, especially in developing countries.

Despite the potential dangers, biologics and genetic therapies offer enormous potential for treating a range of diseases and improving the quality of life of patients. It is important to continue research, raise

awareness, and take these aspects into account when developing and applying new technologies in medicine.

To date, gene therapy has demonstrated significant advances in the treatment of some diseases. Some of the key advances in gene therapy to date include:

1. Gene therapy has shown success in treating a number of inherited diseases, such as cystic fibrosis, spinal muscular atrophy and hemophilia.

2. CAR-T cells, genetically modified to more effectively kill cancer cells, have already led to significant advances in the treatment of lymphomas and leukemias.

3. Introducing genes directly into the patient's eye makes it possible to fight retinopathy and other eye diseases.

4. Gene therapy can be used to combat infectious diseases such as human immunodeficiency virus (HIV) and hepatitis.

5. Development of new technical methods: With the advent of CRISPR technology, the possibilities of gene therapy have expanded significantly, allowing more precise and effective correction of genetic defects.

These advances demonstrate the potential of gene therapy as a promising treatment modality whose research continues to evolve for broader medical applications.

Today, there are many drugs developed based on biology, so-called biological drugs (biological drugs or biological medicines). Some of the more well-known biology-based drugs include:

1. Infliximab (Remicade): A drug used to treat various inflammatory diseases such as Crohn's disease and rheumatoid arthritis.

2. Stem Cell Transplants: Procedures that use stem cells to treat certain types of cancer and other diseases such as leukemia and lymphomas.

3. Erythropoietin (EPO): A drug that stimulates the production of red blood cells and is used for various hematopoietic disorders.

4. Interferons: A group of cytokines used in the treatment of cancer, viral infections and immune disorders.

5. Embelin: A natural compound that exhibits antioxidant and anti-inflammatory properties is being investigated as a potential drug in the treatment of various diseases, including cancer.

6. Monoclonal antibodies: Drugs directed at specific targets in the body to treat cancer, autoimmune diseases and other pathologies.

These examples highlight the wide range of biologics that have been successfully used in clinical practice to treat a variety of diseases.

CONCLUSION

The development of new types of drugs, such as biologics and genetic therapies, is an important step towards personalized medicine and improved patient outcomes. New technologies and innovations in this field continue to bring hope for effective treatment of various diseases and improve the quality of life of people around the world.

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