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РОЛЬ ИННОВАЦИОННЫХ ТЕХНОЛОГИЙ В МЕДИЦИНЕ

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Статья рассматривает роль инновационных технологий в медицине. Приводятся примеры успешного применения современных технологий в медицине, подчеркивается важность их интеграции в медицинскую практику для улучшения качества медицинской помощи и повышения эффективности работы медицинских учреждений.

Ключевые слова: инновационные технологии, кибер-нож, иммунотерапия злокачественных новообразований, синдром Дауна.

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THE ROLE OF INNOVATIVE TECHNOLOGIES IN MEDICINE

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The article examines the role of innovative technologies in medicine. Examples of successful application of modern technologies in medicine are given, the importance of their integration into medical practice is emphasized to improve the quality of medical care and improve the efficiency of medical institutions.

Key words: innovative technologies, cyber knife, immunotherapy of malignant neoplasms, Down syndrome.

Innovation is an integral part of any scientific field, including healthcare. The innovative field in medicine is aimed at developing and implementing new technologies, methods of diagnosis, treatment and prevention of diseases, as well as improving the quality of medical care and improving the efficiency of medical institutions.

The main areas of innovation in medicine include:

1. Medical technologies: development and implementation of new medical devices, devices, instruments, materials and other technical means that allow for more accurate and effective diagnosis, treatment and prevention of diseases.

2. Medical information technologies: creation and development of e-health systems, electronic medical records, telemedicine, medical data management systems and other information technologies that improve the quality of medical care, increase the efficiency of medical institutions and ensure the availability of medical services.

3. Biotechnology: development and application of new methods and technologies in the field of genetics, molecular biology, cell and tissue engineering, which allow the creation of new drugs, diagnostic tests, methods of treatment and prevention of diseases.

4. Pharmaceuticals: development and production of new medicines, vaccines, biologics and other medical devices that allow for more effective treatment and prevention of diseases.

5. Organization of medical care: development and implementation of new models of organization of medical care, including telemedicine, mobile medicine, home medicine and other forms that improve the availability and quality of medical care.

6. Medical education and science: the development and implementation of new methods and technologies of education, research and development, which allow to improve the skills of medical professionals and improve the quality of medical care.

One example of innovative technologies is the cyber knife. This is a high-tech cancer treatment method that uses stereotactic radiosurgery. This method is based on the use of powerful radiation, which is directed at the tumor with high accuracy. The system consists of a robot that moves the radiation source around the patient, and a computer that monitors and directs the radiation.

The cyber knife treatment procedure is usually performed on an outpatient basis and does not require hospitalization. The patient lies on a special table, and the cyber knife system moves around him, directing radiation at the tumor. The procedure usually takes several hours and does not require anesthesia, allowing the treatment of various types of cancer, including cancer of the brain, lungs, liver, kidneys, prostate and other organs [1].

The advantages of the cyber knife include high accuracy and minimal impact on healthy tissues, which avoids many of the side effects associated with traditional radiotherapy. In addition, the cyber knife procedure usually does not require hospitalization and can be performed on an outpatient basis, as well as provides the opportunity to work on anatomically inaccessible areas of the body.

Overall, the cyber knife is an innovative cancer treatment method that can be effective for certain types of tumors and situations. However, it should be used in combination with other treatments and under the supervision of experienced specialists.

Another example of innovative technologies in healthcare is a universal method of using various engineered cells, the activity of which is associated with the release of inhibitors that suppress the division of cancer cells [2].

The essence of the method is as follows: scientists genetically modify certain types of cells, for example, immune cells, stem cells or E. coli bacteria, so that they can produce and release certain ensembles of substances that inhibit the growth and division of carcinogenic cells.

The advantages of this method include its high specificity and accuracy. Engineered cells can target certain types of cancer cells, thus avoiding exposure to healthy ones. In addition, this method can be used in combination with other treatments, such as chemotherapy or radiation therapy, to increase the effectiveness of treatment.

However, this method has its limitations. First, it requires genetic modification of cells, which can be a complex and expensive process. Secondly, the effectiveness of this method may depend on

the type of cancer and the stage of the disease. In addition, there may be side effects associated with the introduction of genetically modified cells into the body.

In general, the method of using various engineered cells, the activity of which is associated with the release of inhibitors that inhibit the division of cancer cells, is a promising approach in the treatment of cancer. However, it requires further research and development to fully evaluate its effectiveness and safety.

Down syndrome is a genetic aberration, the development of which is not determined by the lifestyle of parents and environmental factors. At the same time, this chromosomal pathology is the most common among others: 1 case per 700 births. It should also be noted that this syndrome occurs with the same chance in both boys and girls [3].

Trisomy of the 21st pair of chromosomes is the cause of the development of Down syndrome. Geneticists have suggested that this pair can be modified in such a way as to prevent the "reading" of genes with an extra – third chromosome on this section of DNA, which will eventually prevent the development of the syndrome. However, there is a problem – a huge number of genomes in the 21st chromosome, which makes it much more difficult to work on the structure of DNA.

Innovative medical technologies play an important role in medicine, providing new opportunities for the diagnosis, treatment and prevention of diseases. The use of new medical devices, devices, instruments, materials and other technical means allows for more accurate and effective diagnosis, treatment and prevention of diseases. Biotechnologies, pharmaceuticals, medical information technologies and other areas of innovation in medicine are aimed at creating new medicines, diagnostic tests, methods of treatment and prevention of diseases, as well as improving the organization of medical care and professional development of medical workers. Innovative medical technologies have the potential to improve the quality of medical care and improve the efficiency of medical institutions.

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