THE IMPORTANCE OF CLINICAL PHARMACY AND PHARMACOKINETICS

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Abstract: Clinical pharmacy and pharmacokinetics are important branches of modern medicine and pharmacy, which are aimed at understanding how drugs act in the human body and increasing their effectiveness and safety in clinical use. These disciplines are not limited to the scientific study of drugs, but also play an important role in solving complex issues that arise in their practical use. Thus, clinical pharmacy and pharmacokinetics are closely related to other areas of medicine and serve to maximize the effectiveness of drug therapy.

Keywords: pharmacy, pharmacists, modern medicine, drugs, modifications, therapy, patient, treatment, dose.

The word pharmacokinetics itself consists of two parts, "pharmaco" - drug, and "kinetics" - movement. This science teaches on a scientific basis how drugs enter the body, how they are distributed, what modifications they undergo, in what amount and where they are metabolized, and how they are excreted. By analyzing pharmacokinetic processes, the concentration of the drug in the blood and tissues is determined, which makes it possible to assess its effect and determine the optimal dose. Incorrect dosage or incorrect administration of the drug can lead to serious negative consequences for the patient's body. Therefore, pharmacokinetics plays a crucial role in ensuring the safety of drug therapy. Clinical pharmacy is a science that studies the effect of drugs on the health of patients and manages drug therapy in collaboration with doctors and pharmacists.

Clinical pharmacists are actively involved in monitoring the use of drugs, managing them, and identifying side effects. They develop optimal drug therapy plans, taking into account the individual characteristics of the patient, the state of the disease and their interaction with other drugs. At the same time, clinical pharmacists help patients improve their drug therapy by providing advice on how to take the medication correctly. This helps to increase the effectiveness of drugs and improve the quality of life of patients.[1]

The interconnection of pharmacokinetics and clinical pharmacy creates an excellent system of drug therapy. Pharmacokinetic data helps clinical pharmacists to

understand in-depth the action of drugs in the body, allowing drug therapy to be tailored to individual characteristics. For example, factors such as age, gender, genetic factors, liver and kidney function can affect the pharmacokinetics of drugs. The clinical pharmacist will take this information into account to determine the dose of the drug intended for the patient, which will increase the effectiveness of the treatment process. In modern medicine, side effects of drugs and their interaction are an important problem. Clinical pharmacy develops effective methods for preventing and managing these problems. Clinical pharmacists work closely with physicians to minimize adverse effects, allergic reactions, toxic effects, and other adverse effects of medications. They continuously monitor the patient's drug therapy and change or adjust therapy plans as needed. This is of great importance in maintaining the patient's health.[2]

Pharmacokinetics also plays an important role in the development of new drugs and their clinical trials. By studying the action of new drugs in the body, analyzing their metabolism and release processes, their safety and effectiveness are evaluated. Also, pharmacokinetic studies serve as the basis for the development of new dosage forms and the creation of Effective Drug Delivery Systems. This has a major impact on the development of modern pharmaceuticals. The disciplines of Clinical Pharmacy and pharmacokinetics help to ensure the personalization of drug therapy. Each patient's organism is specific, and the response to medication can also be different. Therefore, the role of these disciplines in the planning of individual drug therapy is incomparable. For example, pharmacokinetic and clinical pharmacology data are essential for determining drug doses for the elderly, children, pregnant women, and patients with chronic diseases. These disciplines help reduce the side effects of drug therapy and maximize its effectiveness.[3]

The tasks of clinical pharmacists are not limited only to the choice and dosage of drugs. They also monitor the patient's adherence to drug therapy, prevent misuse of drugs, identify drug-related problems, and advise physicians in solving them. Clinical pharmacists also play a large role in improving patients ' drug knowledge, training them in drug intake procedures. This is an important factor in the successful course of drug therapy. The further development of the disciplines of Clinical Pharmacy and pharmacokinetics contributes significantly to the development of modern medicine. With the help of new technologies, computer models and biotechnology, it became possible to more accurately determine the movement of drugs in the body and their clinical effectiveness. This ensures further personalization of drug therapy and its maximum effective use. At the same time, the disciplines of clinical pharmacology and pharmacokinetics serve as the main scientific basis for the development of new treatments and improving the safety and efficacy of drugs.[4]

In general, clinical pharmacy and pharmacokinetics are disciplines that are important in improving the quality of life of patients, improving the effectiveness of

drug therapy, and reducing side effects. They also occupy an integral place in the training of personnel in the field of Medicine and pharmacy. The activities of clinical pharmacists and pharmacokinetics specialists serve to ensure the effective and safe use of drugs in the health system. Therefore, special attention to these disciplines and their development are one of the main factors that shape the future of Medicine. In clinical pharmacy, control of drug side effects plays an important role in ensuring the effectiveness of drug therapy and the safety of patients. When drugs affect the human body, they not only give the intended therapeutic effect, but can sometimes cause unexpected and unworthy reactions, that is, side effects. Side effects vary, with varying severity, duration, and mechanisms of action. Therefore, in clinical pharmacy, it is necessary to constantly control the side effects of drugs. This process serves to improve the general condition of the patient, reduce the consequences of improper drug use and improve the quality of medical care.[5]

The process of controlling side effects of drugs requires constant and systematic monitoring. In the conditions of the clinic, it is necessary to regularly check the condition of patients and assess the effectiveness and safety of drug therapy. The availability of complete information about the drugs being administered to the patient, as well as prior awareness of their side effects, is of great importance to clinical pharmacists and doctors. Each type of drug has its own specific side effects, and specific measures have been developed to identify and prevent them. An in-depth study of the patient's medical history and current health status are key factors in determining side effects. Factors such as allergic reactions, chronic diseases, interactions with other drugs can exacerbate drug side effects or cause new side effects to occur. Therefore, all medical information of the patient is carefully analyzed before using the drug. During this process, the patient and their family are fully engaged in communication, and their health status and response to medications are studied. Based on this information, doctors develop an individual approach.[6]

Clinical observation is of great importance in determining the side effects of drugs. The patient's condition is regularly checked, his general health indicators, blood pressure, heart rate, respiratory condition and other physiological parameters are assessed. Also, changes are observed in the patient's behavior, eating habits, as sleep. If any adverse signs or changes are detected, information about this is quickly provided to the pharmacist or doctor. The main purpose of clinical observation is to detect and report adverse effects early. Laboratory and diagnostic methods are widely used as additional tools for detecting side effects. Blood analysis, evaluation of kidney and liver functions, electrocardiogram, in many cases, help to determine the effect of drugs on the body. These analyzes are carried out regularly, especially when using drugs with long-term or strong effects. Laboratory results combined with clinical observation are the main source of information to ensure the safety of drug therapy. In modern clinical

pharmacy, electronic health systems and specialized farmacovigilance programs are very important in controlling side effects. Through these systems, information about drug-related side effects is collected, analyzed, and appropriate measures are taken when necessary. Farmacovigilance systems provide long-term monitoring to improve the safety of drugs and detect new side effects. These systems allow for real-time information on the efficacy and safety of drugs in clinical practice.[7]

Conclusion:

In conclusion, the disciplines of Clinical Pharmacy and pharmacokinetics play a decisive role in establishing the scientific and practical foundations of drug therapy, studying the individual response of patients to drugs, and ensuring the safety of drugs. These disciplines serve to improve the effectiveness of drug therapy, reduce side effects, and improve patient health. Their development and effective application in the medical system remain an important factor in ensuring quality and safe drug therapy for patients. Therefore, the training of clinical pharmacists and pharmacokinetics specialists and the support of their activities is one of the priorities of the health system.

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