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DIAGNOSTIC TECHNOLOGIES

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Abstract: *Diagnostic technologies occupy an important place in modern medicine and health care. They help diagnose diseases, assess the condition of patients, and manage the treatment process. With these technologies, doctors will be able to identify diseases at an early stage, understand their causes and development, and also develop treatment strategies, taking into account the individual characteristics of patients.*

Keywords: *diagnostic technologies, medicine, modern diagnostic methods, symptoms, treatment, analysis, samples.*

The development of diagnostic technologies led to revolutionary changes in the field of Medicine. In earlier times, the diagnosis of diseases was often made based on the symptoms of the patient, while in modern diagnostic methods it is now possible to accurately and quickly identify diseases. Thanks to this, the treatment process for patients is becoming more efficient and convenient. Laboratory analysis is one of the main components of diagnostic technologies. Through the analysis of blood, urine and other biological samples, it is possible to assess the internal state of the body, metabolic processes and the functioning of the immune system. Blood analyzes are widely used to identify, for example, anemia, infection or inflammatory processes. It is also possible to assess the condition of the kidneys and urinary tract through urine analysis.[1]

Imaging diagnostic technologies, including X-ray, ultrasound, computed tomography, and magnetic resonance imaging, are important tools for detecting diseases. X-ray images show the condition of bones and internal organs, while ultrasound provides information about soft tissues and internal organs. Computed tomography and magnetic resonance imaging, on the other hand, provide more accurate and detailed images to help identify complex diseases. Genetic diagnostic technologies have evolved greatly in recent years. They play an important role in the identification and Prevention of genetic diseases. Through genetic tests, the patient's DNA is analyzed and genetic mutations or abnormalities are detected. Through this method, information can be obtained about hereditary diseases, oncological diseases and many other pathologies. Genetic diagnostics can also help develop individual patient treatment plans. Artificial intelligence and data analysis technologies play an important role in making diagnostic processes more efficient. Artificial intelligence can be used to quickly analyze large amounts of data and help identify diseases. This helps

medical professionals make quick and clear decisions. For example, with the help of artificial intelligence, it is possible to analyze the results of imaging diagnostics and speed up the process of detecting diseases.

Telemedicine and remote diagnostic technologies are also becoming more common. These methods allow patients to communicate remotely with Doctors Without Leaving Home. Through remote diagnostics, patients will be able to assess their condition and carry out the necessary analyzes. This will save time and funds. Telemedicine is also important in meeting the need for medical care for patients living in rural areas. The development of diagnostic technologies is associated with the emergence of new equipment and methods. With the help of new equipment, the process of detecting diseases is becoming more accurate and fast. For example, it is possible to quickly carry out blood analyzes and obtain results through new methods of analysis. This helps to save patients time and take quick treatment measures.[2]

Diagnostic technologies play an important role not only in the identification of diseases, but also in the process of their treatment. When choosing treatment strategies, decisions are made based on the results of diagnostics. Diagnostic technologies are also used to assess the effectiveness of the treatment process. For example, imaging diagnostic methods are used to monitor the patient's condition and assess the results of treatment. In addition to classic diagnostic methods, new technologies such as biosensors and wearables (wearable devices) also help to make diagnostic processes more efficient. Biosensors allow real-time monitoring of various parameters of an organism, enabling physicians to continuously monitor the patient's condition. Wearables, on the other hand, are used to monitor patients ' performance and health status, which helps to improve their quality of life.[3]

Artificial intelligence is leading to revolutionary changes in modern medical and diagnostic processes. It plays an important role in optimizing the processes of data analysis, disease detection and treatment using algorithms and systems capable of reproducing human intelligence. The importance of artificial intelligence in the diagnostic process is determined by a number of factors, including speed, accuracy, efficiency and creating new opportunities in working with patients. First, artificial intelligence is important in accelerating the diagnostic process. Traditional diagnostic methods are often time-consuming, as doctors have to spend a lot of time reviewing, analyzing, and evaluating results for patients. With artificial intelligence, it is possible to quickly analyze a large database and speed up the process of detecting diseases. For example, in imaging diagnostic techniques, artificial intelligence can automatically analyze images and detect diseases, allowing physicians to make quick and accurate decisions. Secondly, artificial intelligence helps to increase the accuracy of the diagnostic process. Artificial intelligence algorithms provide a high degree

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of accuracy in disease detection by learning from a large database. For example, in the detection of oncological diseases, imaging data is analyzed using artificial intelligence, and the detection of malignant tumors is greatly improved. This increases the chances of early treatment for patients and helps prevent the progression of the disease.[4]

Thirdly, artificial intelligence increases efficiency in the diagnostic process. With automated systems using artificial intelligence, doctors will be able to work with more patients. This contributes to the more efficient use of resources in medical institutions. Artificial intelligence can also help medical professionals analyze complex data, which can reduce their workload. In addition, artificial intelligence provides new opportunities in working with patients. With remote diagnostics and telemedicine, patients will be able to monitor their health status and communicate with doctors remotely. Artificial intelligence can be used to monitor and analyze the health status of patients in real time, allowing doctors to constantly monitor the condition of patients. This creates comfort for patients and helps to improve their health status. The importance of artificial intelligence in the diagnostic process is also demonstrated in the development of individualized treatment strategies. Artificial intelligence algorithms help determine the most effective treatments, taking into account the individual characteristics of patients. This allows for more efficient and individualized treatment plans for patients. The use of artificial intelligence in the diagnostic process also raises new ethical and social issues in the medical field. Issues such as protecting patients ' personal data, transparency of artificial intelligence algorithms, and correct interpretation of results are important. Doctors and medical professionals should take these issues into account and strive to provide patients with the best service. Artificial intelligence plays an important role in the diagnostic process. It helps to identify diseases, optimize the treatment process and create new opportunities when working with patients. The development of artificial intelligence is creating new opportunities in the field of Medicine and serves to improve the quality of life of patients. In the future, the role of artificial intelligence in the diagnostic process is expected to increase further, which will help make the processes of detection and treatment of diseases in medicine more effective and accurate.[5]

Conclusion

In conclusion, diagnostic technologies occupy an important place in modern medicine. They help diagnose diseases, monitor the healing process, and assess the condition of patients. Their development is creating new opportunities in the field of Medicine and serves to improve the quality of life of patients. Further development of diagnostic technologies and the emergence of innovative solutions are expected in the future. This

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helps to make the detection and treatment processes in medicine more effective and accurate.

REFERENCES:

1. Esteva, A., Kuprel, B., Wang, S., et al. (2019). "Diagnostic Accuracy of Deep Learning Algorithms for Detection of Melanoma in Skin Lesions." JAMA Dermatology, 155(1), 19-26.

2. Gulshan, V., Peng, L., Coram, M., et al. (2016). "Development and Validation of a Deep Learning Algorithm for Detection of Diabetic Retinopathy in Retinal Fundus Photographs." JAMA, 316(22), 2402-2410.

3. Rajpurkar, P., Irvin, J., Zhu, K., et al. (2017). "Deep Learning for Chest Radiograph Diagnosis: A Retrospective Comparison of the CheXNeXt Algorithm to Radiologists." PLOS Medicine, 15(11), e1002686.

4. Ting, D. S. W., Cheung, C. Y. L., Lim, G., et al. (2019). "Artificial Intelligence and Deep Learning in Ophthalmology: A Review." The British Journal of Ophthalmology, 103(2), 167-175.

5. Kermany, D. S., Goldbaum, M., Cai, W., et al. (2018). "Identifying Medical Diagnoses and Treatable Diseases by Image-Based Deep Learning." Cell, 172(5), 1122-1131.

6. Yang, G., Wang, Y., Zhang, Y., et al. (2020). "Artificial Intelligence in Healthcare: Past, Present, and Future." Seminars in Cancer Biology, 34, 1-10.

7. Choi, E., Schuetz, A., Stewart, W. F., et al. (2016). "Using Deep Learning to Predict Hospital Readmission." Journal of Medical Internet Research, 18(6), e123.