

PARKINSON'S DISEASE CAUSES, SYMPTOMS, AND TREATMENT METHODS

Tashkent State Medical University

Senior Lecturer PhD of the Department of Human Anatomy and OSTA

Tolmasov Ruzibek Tolmasovichruzibektolmasov@gmail.com

Tashkent State Medical University Treatment Case No. 2 Faculty student

Nashvandova Ruxshona

Abstract: This article discusses the etiology, clinical manifestations, diagnostic criteria, and modern treatment approaches of Parkinson's disease. Motor and non-motor symptoms observed in the early and advanced stages of the disease are analyzed. In addition, the effectiveness of pharmacological therapy, surgical treatment (deep brain stimulation – DBS), and rehabilitation methods is reviewed. The figures and diagrams presented in the article clearly illustrate the pathophysiology of Parkinson's disease, the clinical presentation of tremor, and the process of DBS implantation. The study highlights the importance of timely diagnosis and comprehensive treatment in improving the quality of life of patients with Parkinson's disease.

Key words: Parkinson's disease, tremor, hypokinesia, rigidity, postural instability, dopamine deficiency, substantia nigra, deep brain stimulation (DBS), electrode implantation, levodopa, agonists, MOA-V inhibitors, diagnostics, neurology, neurodegeneration.

Research objective: The etiology, clinical manifestations, and current treatment approaches of Parkinson's disease are systematically reviewed, with an emphasis on early detection and effective management through individualized strategies.

Introduction: Parkinson's disease (PD) is the second most common neurodegenerative disorder after Alzheimer's disease. It typically develops in individuals over the age of 60; however, it can also begin before the age of 50, in which case it is referred to as young-onset Parkinson's disease. PD is generally divided into motor symptoms, which affect movement, and non-motor symptoms, which do not directly affect movement [1,2,5,6,13,14,15]. People with Parkinson's disease may also experience problems related to balance, coordination, and gait. Although PD most commonly appears after the age of 50, it can also affect younger individuals. Approximately 1 million people in the United States are living with Parkinson's disease, and more than 10 million people worldwide are affected by this condition [3,8,10,18,20,22].

Materials and methods: In the process of preparing this scientific article, existing scientific literature, textbooks, research articles, and the results of recent clinical studies related to meningoencephalitis were thoroughly reviewed and analyzed. Analytical, comparative, and scientific methods based on modern computer technologies were employed in the study. The aim of the research was to identify the most effective and clinically relevant methods for the diagnosis of Parkinson's disease (PD).

Results and discussion: In the early stages of Parkinson's disease, symptoms may be subtle and difficult to notice. These may include tremor or discomfort in one arm or leg, stiffness, difficulty walking, and changes in tremor amplitude. Shoulder stooping and a shortening of steps may also occur. Early signs include:

- Insomnia
- Seizures
- Pain in the arms and legs
- Lower back pain
- Depressive mood
- Severe fatigue

In addition, autonomic disturbances such as constipation, urinary dysfunction, and excessive sweating may develop.

As the disease progresses, the following symptoms are observed:

- Rigidity: Increased muscle tone and difficulty with passive movements.
- Hypokinesia: Difficulty initiating movements, reduced facial expression (masked face), small handwriting (micrographia), and shortened steps.
- Postural instability: Balance problems and frequent falls.
- Resting tremor: Tremor of the arms, legs, or head, often unilateral.

Drooling, dementia, restless legs syndrome, difficulty swallowing, and speech disorders may also be present.

The main danger of Parkinson's disease is the complete loss of work capacity and the risk of becoming bedridden.

Disability classification is determined as follows:

- Group I: Severe impairments with complete loss of self-care ability.
- Group II: Significant difficulties with movement.
- Group III: Moderate difficulties with self-care and movement, with minimal limitations in work capacity.

Factors that increase the risk of Parkinson's disease include:

- Advancing age: The disease typically develops after the age of 60.
- Strong family history: Multiple affected relatives.
- Gender: Men are more susceptible than women.
- Prolonged exposure to chemicals and toxins.

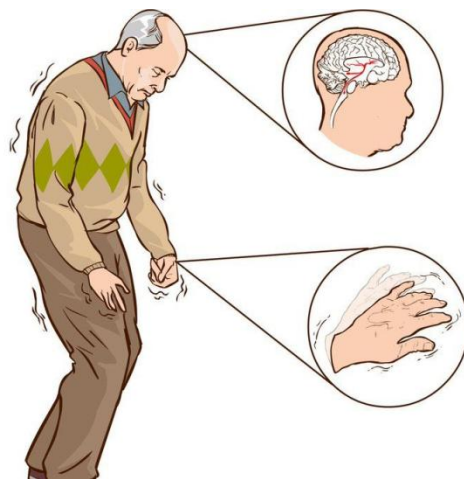


Figure 1. Symptoms of tremor and movement disorders typical of Parkinson's disease.

Life expectancy in Parkinson's disease depends on early diagnosis and timely treatment. With prompt initiation of therapy, supportive care, and adherence to medical recommendations, life expectancy can be close to normal. Without proper treatment and in cases of rapid disease progression, Parkinson's disease may shorten life expectancy by 5–7 years.

Groups at increased risk of developing Parkinson's disease include:

- Individuals with a genetic predisposition.
- Elderly people.
- Men (the disease occurs more frequently in males).
- Residents of polluted and industrial areas.

Prevention of Parkinson's disease is especially important for individuals with a hereditary predisposition. They should avoid:

- Head injuries.
- Extreme sports.
- Working in the chemical industry.
- Living in environmentally polluted areas.

Parkinson's disease may also be associated with several treatable conditions, including memory loss, difficulty thinking and concentrating, emotional disturbances and depression, swallowing difficulties, sleep disorders, problems with urinary function and bladder control, fluctuations in blood pressure, and chronic fatigue as possible complications.

If you notice any symptoms or have risk factors for Parkinson's disease, you should consult a neurologist. A neurologist may diagnose Parkinson's disease based on:

- A complete medical history
- Neurological and physical examination

Diagnostic tests may include:

- Blood tests, if necessary, to rule out other conditions that may cause similar symptoms
- Imaging studies such as MRI or computed tomography (CT), if required

In some cases, improvement after a trial dose of Parkinson's medications is considered supportive evidence for the diagnosis.

Parkinson's disease may require frequent visits and ongoing follow-up with a neurologist to confirm the diagnosis. Therefore, patients are generally advised not to miss scheduled follow-up appointments.

The diagnosis of Parkinson's disease is carried out in three stages:

Stage I

The presence of parkinsonism is established and differentiated from other psychopathic and neurological disorders. The main features include hypokinesia, muscle rigidity, resting tremor, or postural instability, with no visual, cerebellar, or vestibular disturbances.

Stage II

Other diseases that may present with parkinsonism are excluded. The physician evaluates the presence of the following:

- Long-term remission
- Oculogyric crises
- History of neuroleptic use
- Marked dementia
- Babinski reflex
- Autonomic failure
- Cerebellar symptoms
- Unilateral manifestations persisting for more than 3 years
- Supranuclear gaze palsy
- Lack of response to levodopa
- Communicating hydrocephalus or brain tumor
- Stroke-related worsening of symptoms
- Recurrent head injuries

Stage III

Confirmation of the diagnosis. At least three of the following criteria must be present:

1. Resting tremor
2. Predominance of symptoms on the side of onset
3. Response to levodopa, with effectiveness lasting more than 5 years
4. Disease duration exceeding 10 years

Diagnostic tools used include:

- Magnetic Resonance Imaging (MRI)
- Rheoencephalography (REG)
- Electroencephalography (EEG)
- Computed Tomography (CT)

Treatment methods: In the early stages of Parkinson's disease, amantadine, dopamine receptor agonists (pramipexole, piribedil), and selective MAO-B inhibitors (selegiline) are used. These medications help alleviate symptoms, stimulate dopamine production, and block its

breakdown. Although they are not more effective than levodopa, they can delay the initiation of levodopa therapy.



In the later stages, when Levodopa becomes ineffective, COMT inhibitors are added or patients are switched to medications such as Stalevo. In cases of depression or psychiatric disorders, psychiatric care is provided, and the Levodopa dosage is adjusted.

Surgical treatment:

- Deep brain stimulation of certain brain structures can improve the condition.
- In complex cases, specific brain areas may be lesioned (thalamotomy, pallidotomy).

Folk remedies:

- Oat decoction: Boil oats in water for 1 hour, let it cool, and drink.
- Herbal baths: Add thyme and savory decoction; course can include up to 10 treatments.
- Propolis: Chew a piece of propolis after meals for a 30-day course.
- Herbal tea: Mix bay leaf, valerian, parsley, and chrysanthemum; consume in cycles of 45 days with breaks in between.

While complete treatment of Parkinson's disease may not always be possible, symptoms can be effectively managed. Regular aerobic exercise, balance-focused physical therapy, and stretching are recommended as lifestyle modifications. Speech therapy can also be beneficial for addressing speech difficulties.

Treatment of Parkinson's disease involves two main approaches to controlling symptoms, particularly difficulties with walking, movement, or tremors: medication-based management and lifestyle interventions.

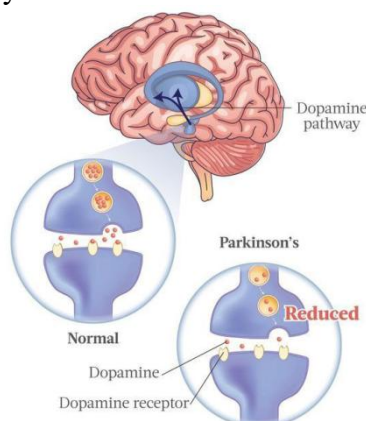


Figure 2. Structure of the deep brain stimulation process in Parkinson's disease.

Surgical Procedure: Deep Brain Stimulation (DBS): In this procedure, electrodes are surgically implanted into specific areas of the brain under local anesthesia. A generator, implanted in the chest near the collarbone, produces electrical impulses that are transmitted to the brain. These electrical impulses help reduce the symptoms of Parkinson's disease.

Considering the potential risks, side effects, and complications associated with DBS, it is generally recommended for patients with advanced Parkinson's disease who do not respond adequately to medication.

Conclusion: Parkinson's disease is a chronic and progressive degenerative disorder of the central nervous system, primarily associated with the degeneration of dopamine-producing neurons in the brain. Genetic predisposition, environmental factors, and the aging process play important roles in its development. Clinically, it manifests with symptoms such as tremor, slowed movements (bradykinesia), muscle rigidity, and impaired balance, along with non-motor symptoms such as depression, sleep disturbances, and cognitive impairments.

Current treatment methods are not aimed at curing the disease completely, but through medications (e.g., Levodopa), surgical interventions, and rehabilitation measures, the quality of life of patients can be significantly improved. Therefore, early diagnosis of Parkinson's disease and a comprehensive, individualized approach to treatment are of significant scientific and practical importance.

References:

1. Dj U. R., Mirsharapov U. M., Tolmasov R. T. Anatomical structure of internal organs and their blood vessels anatomy. – 2024.
2. Худойназарова С. Ш., Толмасов Р. Т. ЛЕЧЕНИЕ АРИТМИИ СЕРДЦА В СОВРЕМЕННОЙ МЕДИЦИНЕ И АНАТОМИИ СЕРДЦА //THE THEORY OF RECENT SCIENTIFIC RESEARCH IN THE FIELD OF PEDAGOGY. – 2024. – Т. 2. – №. 22. – С. 336-341.
3. Yuldasheva Z. et al. NORMAL YURAK TUZILISHINI YOSHGA OID MOSLASHUV O'ZGARISHLARI //Журнал академических исследований нового Узбекистана. – 2024. – Т. 1. – №. 4. – С. 34-37.
4. Tolmasovich T. R., Faliddinovich F. S., Jasurbekovich E. P. TREATMENT METHODS AND ANATOMY OF ISCHEMIC HEART DISEASE IN MODERN MEDICINE //AMERICAN JOURNAL OF APPLIED MEDICAL SCIENCE. – 2025. – Т. 3. – №. 1. – С. 324-331.
5. Tolmasov R. LABORATORY METHODS FOR THE DIAGNOSIS OF UPPER AND LOWER RESPIRATORY TRACT INFECTIONS IN CHILDREN //International journal of medical sciences. – 2025. – Т. 1. – №. 2. – С. 89-93.
6. Tolmasov R. T., Khudoynazarova S. S. OSTEOCHONDROSIS AND ITS TREATMENT METHODS IN MODERN MEDICINE //European Journal of Modern Medicine and Practice. – 2025. – Т. 5. – №. 3. – С. 225-231.
7. Anvarov M. O. O. G. L., Tolmasov R. Z. T. O'ZBEKISTON HUDUDIDA KO 'Z KASALLIKLARI BILAN OG'RIGAN BEMORLAR RUHIY HOLATINING DIAGNOSTIKASI VA PSIXOKORREKSIYA USULLARI //Academic research in educational sciences. – 2025. – №. Conference. – С. 131-134.
8. Tolmasov R. et al. AGE-RELATED CHANGES IN STOMACH STRUCTURE DURING PALM OIL FEEDING DURING POSTNATAL ONTOGENESIS //International Journal of Modern Medicine. – 2025. – Т. 4. – №. 04. – С. 16-23.
9. Толмасов Р. Т. и др. АНАТОМИЯ ПОЧЕК И СОВРЕМЕННЫЕ МЕТОДЫ РАННЕГО ВЫЯВЛЕНИЯ ПОЧЕЧНО-КАМЕННОЙ БОЛЕЗНИ //THE THEORY OF RECENT SCIENTIFIC RESEARCH IN THE FIELD OF PEDAGOGY. – 2024. – Т. 2. – №. 22. – С. 329-335.
10. Tolmasov R. T. et al. Treatment of Glaucoma in Modern Medicine //American Journal of Pediatric Medicine and Health Sciences. – 2025. – Т. 3. – №. 1. – С. 58-64.
11. Худойназарова С. Ш., Толмасов Р. Т. ЛЕЧЕНИЕ АРИТМИИ СЕРДЦА В СОВРЕМЕННОЙ МЕДИЦИНЕ И АНАТОМИИ СЕРДЦА //THE THEORY OF RECENT

SCIENTIFIC RESEARCH IN THE FIELD OF PEDAGOGY. – 2024. – T. 2. – №. 22. – C. 336-341.

12. Tolmasov R. T., Jamilova S. K. Causes of Rheumatism and Methods of Treatment in Modern Medicine //American Journal of Pediatric Medicine and Health Sciences. – 2024. – T. 2. – №. 8. – C. 102-107.

13. Tolmasovich T. R., Narimon o'g'li T. L. Methods of treatment of congenital heart defects in modern medicine //Western European Journal of Medicine and Medical Science. – 2024. – T. 2. – №. 8. – C. 20-26.

14. Tolmasovich, T. R. (2024). MODERN MEDICAL METHODS OF EARLY DETECTION AND TREATMENT OF KIDNEY STONE DISEASE. *JOURNAL OF APPLIED MEDICAL SCIENCES*, 7(6), 55-61.

15. Tolmasovich T. R. et al. MODERN METHODS AND ANATOMY OF DETERMINING LUNG DISEASES //SHOKH LIBRARY. – 2025.

16. Tolmasovich T. R. et al. ANATOMY AND METHODS OF TREATMENT OF ULCERATIVE COLITIS IN MODERN MEDICINE //JOURNAL OF APPLIED MEDICAL SCIENCES. – 2024. – T. 7. – №. 6. – C. 62-70.

17. Tolmasovich T. R. et al. TREATMENT OF MYOCARDIAL INFARCTION IN MODERN MEDICINE //JOURNAL OF MEDICINE AND PHARMACY. – 2024. – T. 7. – №. 6. – C. 132-138.

18. Tolmasovich, Tolmasov Ruzibek, and Raxmatxonov Rufatxon Rasulxon o'g'li. "STOMACH STRUCTURE AND ITS CHANGES DEPENDING ON AGE." *JOURNAL OF MEDICINE AND PHARMACY* 7.6 (2024): 107-112.

19. Ro'zibek T. T., Mirsharapov U. M. MORPHOMETRY OF GASTRIC WALL LAYERS UNDER THE INFLUENCE OF PALM OIL //Central Asian Journal of Medicine. – 2025. – №. 3. – C. 117-125.

20. Tolmasov R. T. et al. Pancreas Disease-Modern Diabetes Treatment Methods and Anatomy //American Journal of Pediatric Medicine and Health Sciences. – 2025. – T. 3. – №. 4. – C. 132-137.

21. Tolmasov R. T., Shukurov U. M. Modern Treatment Methods of Kidney Structure and Chronic Pyelonephritis //American Journal of Pediatric Medicine and Health Sciences. – 2025. – T. 3. – №. 4. – C. 264-271.

22. Tolmasov R. T. et al. Early Detection and Modern Treatment Methods of Congenital Heart Defect //American Journal of Biomedicine and Pharmacy. – 2025. – T. 2. – №. 5. – C. 46-54.

23. Толмасов Р. Т. и др. ЯЗВНАЯ БОЛЕЗНЬ ЖЕЛУДКА И СОВРЕМЕННЫЕ МЕТОДЫ ЕГО ЛЕЧЕНИЯ //THE THEORY OF RECENT SCIENTIFIC RESEARCH IN THE FIELD OF PEDAGOGY. – 2024. – T. 2. – №. 22. – C. 342-349.