



PARKINSON' DISEASE: -A REVIEW

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Abstract: Parkinson's disease (PD) is a type of movement disorder which is caused by a loss of nerve cells in substantia nigra of the brain, it happens when nerve cells in the brain don't produce adequate of a brain chemical called dopamine. This leads to a decrease in a chemical called dopamine in the brain. Sometimes it may cause due to genetic disorders, but most of the cases do not seem to route in families. It might be caused by the exposure of the chemical into the environment. PD usually start affecting around age 60, but it may start earlier also starts gradually, frequently one side of the body and then later they affect both sides. They include vibrating of hands, arms, legs, jaw and face stiffness of the arms, legs and trunk and also slowness of movement, Poor balance and coordination. PD is more common in man then women. Diagnosis of the PD is very difficult because there is no lab test for PD, so Doctors use the medical history and a neurological examination to diagnose.

Index Terms - Parkinson's disease (PD); Mutations; Motor and Non-Motor; Diagnosis; Levodopa.

I. INTRODUCTION

Parkinson's (PD) is worldwide distributed, moving all cultures and races, with an estimated worldwide prevalence of about 6.3 million people. Parkinson's disease is a persistent or long-term disorder of the brain. Parkinson's disease was first described in 1817 by James Parkinson [1-4] that is why it is named as Parkinson's Disease. Parkinson's disease is a progressive, degenerative neurological condition that affects a person's control of their body movements. It mainly affects the way the brain co-ordinates the movements of the muscles in various parts of the body. It is not contagious and not fatal. It is thought to be genetic in a very small percentage of cases [5]. Parkinson's disease is a liberal, degenerative neurological condition that affects a person's control of their body co-ordination and their movements. It mostly affects the way the brain co-ordinates the movements of the muscles in various parts of the body. It is neither infectious nor deadly. It is supposed to be genetic in a very small percentage of cases [5]. PD usually start around the age of 60, but it may start earlier. About 5 to 10 percent of people with Parkinson's have "initial onset" disease which commences before the age of 50 years. The disease affects about 50 percent more in men than women; yet younger people can be spotted with Parkinson's too, this is mentioned as a Young Onset Parkinson's [5-6]. In very infrequent cases, parkinsonian symptoms may be appearing in people before the 20 years of age and this condition is called juvenile Parkinsonism. That's is most often seen in Japan and later on Italy or Brazil as well. Juvenile Parkinsonism frequently turns in families and is also sometimes related to a transmuted gene [7-9]. Parkinson's disease may be congenital. People who have PD and are with one or more close relatives then there has an increased risk of emerging the disease themselves, but the total risk is still just 2 to 5 % except the family has a recognized gene transmutation for the disease [10]. cases of Parkinson's disease are caused by mutations in the LRRK2, PARK2 or parkin, PARK7 or DJ1, PINK1, or SNCA genes or by mutations in genes that have not so far been known [11-14]. Parkinson's disease cannot be treated/cured, but the symptoms can be achieved/managed. With a combination of medication and multidisciplinary support, people with Parkinson's disease can live self-regulating and productive lives [15].

CAUSES OF Parkinson's Disease: -Formerly there is no known cause of understanding of why a person progresses Parkinson's, but there are many theories as to the causes and it is usually thought that several factors are responsible. That is PD can be caused by many factors like genetic mutation, environmental factors, medication, cerebral infarction, progressive supranuclear palsy, and others. This all factors vary persons to person. Medical experts are not yet certain what destroys the dopamine producing nerve cells or what predisposes some people to develop Parkinson's and not others [16]. Though, Parkinson's is neither communicable disease nor transmissible [17].

Genetics: In the recent developments in genomic studies have identified mutations in a number of pathogenic genes (SNCA, Parkin, UCHL1, DJ-1, PINK-1, LRRK2 and ATP13A2 genes) that contribute to familial forms of PD [18-21]. Parkinson's disease can run in relatives as a result of defective genes being passed to a child by their parents, further it is very rare.

Environmental factors: The possible environmental risk factors include farming activity, insecticide exposures, well-water drinking, and history of head shock [20-21]. The risk of PD may be increased due to environmental factors said by the many of the researchers.

Other progressive brain conditions: Like the progressive supranuclear palsy, multiple systems atrophy and corticobasal degeneration are also causes of PD.

Cerebral infarction: It is a severe stroke which causes the more than a few Part of the brain to die.

Medication: After taking the medication of the PD, then if the sigh occurs then the types of antipsychotic medication, and usually recover once the medication should be stopped.

II. PARKINSON'S SYMPTOMS

the group of the condition called motor system disorders, which results in the loss of dopamine producing brain cells. Messages are passed amongst brain cells, nerves and muscles by compounds called neurotransmitters [22-23]. Dopamine plays a vigorous role in regulating the movement of the body. Most of the researchers think that a combination of genetic and environmental factors is responsible [24-25]. Non-motor symptoms such as pain, sadness and problems with memory and sleep can also occur and have an impact on the day to day life of the person with PD [2, 4, 26-27]. the decrease in the dopamine show the symptoms of PD. The main four symptoms include-

Slowness of movement (bradykinesia): Bradykinesia is a condition which show the disabling symptom and also refers to slowness, decreased movement breadth, and dysrhythmia. In this condition the Physical movements become slower than normal, which make everyday tasks tough and can result in a characteristic slow, shuffling walk with very small steps [28, 30, 34-36].

Tremor: it is the most common symptoms generally seen in upper extremities. further, this symptom can binge to the other parts of the body like lips, chin, jaw and tongue during the course of the disease [90]. This condition is related to an inequality of neurotransmitters, dopamine and acetylcholine. It may be least by dopamine replacement therapy. These symptoms usually start in the hand or arm and is more likely to occur when the limb is at rest [29-33].

Muscles stiffness /rigidity: PD increases the tendon stiffness by creating the tension in the tendon. Stiffness and tension in the muscles or muscles group, makes difficult to move anywhere and make facial flexes and can result in painful muscle twinges (dystonia) [28, 30, 37]. **Postural Instability:** In initial Parkinson's, the posture may show a slight flexion of the neck or trunk with a slight thin to one side [38-42]. **Postural variability** is one of the most restricting features of Parkinson's disease. Postural instability is often veteran in the late stages of PD and is an indicator of disease development. **Gait disturbances** also develop later in the evolution of the condition. **Other Symptoms:** Anosmia, Anxiety, Constipation, Depression, Fatigue, Festination of speech, Postural hypotension and Micrographic [27, 43].

III. PROGRESSION OF PARKINSON'S

PD is a neurological disorder which develop time to time slowly, and the symptoms usually seen in one side of the body. Further later on the also spread on other side of the body. Medications only help in managing the symptoms but unfortunately, aren't concerned for slowing the progression of Parkinson's [44]. The symptoms may vary during medication.

Early Parkinson's: Into the starting days Parkinson's, the symptoms may be minor and inhibit with fine motor activities. Tremor if present may appear on one side of the body, starting either with the finger/hand or toe/foot [45]. **Advanced Parkinson's:** As Parkinson's progresses, the symptoms which appeared at the initial days that tend to become more distinct and problems with balance and change in posture become more difficult. PD doesn't directly do not causes patients to die, it is possible to live with Parkinson's for a long time, while symptoms do get worse over time to time [44].

IV. PARKINSON'S DIAGNOSIS

PD is very difficult to diagnose due to absence of laboratory test, so it is significant that the diagnosis is made by a specialist, such as a neurologist or by the patient's history [92]. The specialist examines the person for any physical signs of PD and take a detailed history of the symptoms which patient are experiencing [16]. If there are any symptoms seen Such as Small teeming handwriting, Loss of smell/Anosmia, Facial Masking, Stooped posture, Slowed and stiff movements, Tremor, Frozen Shoulder, change in voice and Sleep disturbances so It would be advisable to take an appointment with a neurologist [17]. The investigative check list of symptoms is collected of Tremor, Bradykinesia, Muscle rigidity, Postural instability [46]. At present there is no final biological test or radiological procedure which diagnoses Parkinson's and autopsy-based studies have shown the among neurologists, diagnostic accurateness results in up to 25% of cases proven incorrect at time of death [16].

Diagnostic Investigations: Brain scans such as MRI/CT Scan may help in detecting the loss of dopamine in the brain and reduce mistake in diagnosis. Neuro imaging that may be done might include:

MRI Scan (Magnetic Resonance Imaging): In this imagining test, the magnetic currents to create images of the brain which give the enhanced view of the deep of the image. MRI scans are usually normal in Parkinson's but are useful at times in identifying conditions that can imitate Parkinson's and helps in individual Parkinson's from other forms of Parkinsonism (like Progressive Supranuclear Palsy (PSP) or Multiple System Atrophy (MSA) [47-48].

CT scan (Computed Tomography): This contains a series of X rays that are passed through different directions that provide a structural view of the brain [92]. Computerized tomography (CT) does not disclose any Parkinson's related changes but will statute out structural deviations which may result in Parkinson's-like symptoms [49-51].

Dopamine transporter Scan (DaT): A DaT scan helps in taking images of the dopamine system in the brain. In this scan, a radioactive dye is vaccinated into the body which after later on binds to dopamine releasing neurons [92]. DaT scans can be irregular in other Parkinson impersonators as well including PSP and MSA hence have to be understood in the light of the clinical results [52-56].

Metaiodobenzylguanidine (MIBG) scan: MIBG help in to detect the PD in early stage with a preclinical. A MIBG scan may be ordered to contribution the discrepancy diagnosis between Parkinson's and related Lewy Body Disease and a group of conditions known as Parkinson's Desirable [57-59].

V. TREATMENT

PD is the second most common neurodegenerative disease in all over world where there is no cure for Parkinson's disease at present time or, but treatments are available to help manage the symptoms and also maintain your quality of life. As Parkinson's developments, there should be increased amount of care/support may be required to the patient, while many people keep a good quality of life with partial care or treatment [60-62].

Physiotherapy: A physiotherapist can help the patients to relieve the muscles stiffness as well as joint pain through movement. Physiotherapist also help in to improve the gait pattern and flexibility. They also try to recover your fitness levels and your capability to manage things for yourself [66-69]. PD is a long-standing and highly discussed issue. There is hard work underway to try and increase the obtainability of these supportive therapies for Parkinson's patients [63-65].

Speech Therapy: This therapy efforts on educating the clearness and volume of speech and provides tips for better statement [71-73].

Occupational therapy: In this therapy the physiotherapist finds out the trigger point of area of difficulty in everyday life of patients. They also help the patients to perform their active daily life performance. Which help the patients to maintain their independence for as long as [70].

Medication: there is no any medication which can cure the PD but although it can manage the symptoms of the Parkinson's disease not all the medication can used in the PD but the medication can be used according to long term and short term. Dopamine is a neurotransmitter which conveys messages between neurons to ensure effective planning, initiation and maintenance of movement [74-76]. To balance or restoring the dopamine and other neurotransmitter, the main three type of the medication can be used such as; levodopa, dopamine agonists and monoamine oxidase-Inhibitor.

Levodopa: The people who have the PD then the patients need to take the levodopa medication because levodopa can observed by the nerve cell into the brain and then turns into the chemical dopamine, which help in to transmit the message between the part of the brain and the nerves which control the body movement. The movement problem can be improved by increase in the level of the dopamine by using levodopa [90]. Levodopa is generally consume as taken as a tablet, Capsule (Sinemet®) or liquid and is often combined with other medication, such as benserazide or carbidopa. These additional medications stop the levodopa being broken down in the bloodstream before it has a chance to get to the brain [77-81]. prolong use of levodopa is also linked to problems such as uncontrollable, jerky muscle movements (dyskinesias) and 'on off' affects-where the person rapidly switches between being able to move (on) and being steady [82-83]. feeling sick (nausea), vomiting, tiredness and dizziness may be the side effects of the levodopa.

Dopamine agonists: It act as an additional for dopamine in the brain and have a similar but slighter effect related to levodopa. This medication generally used in early PD as they are likely to cause involuntary movement than levodopa. Dopamine agonists are consumed as a tablet, but a type called apomorphine which can be injected under the skin (subcutaneously). Possible side effects of dopamine agonists include nausea, vomiting, tiredness and dizziness [84-85]. The patient may need the need blood tests and a chest Xray before some types of dopamine agonist are prescribed [86-88]. The consumption of the Dopamine agonists can also cause hallucinations and an episode of confusion, so they need to be used with precaution, particularly in elderly patients who are more prone. If the patient is prescribed a progression of dopamine agonists, then the initial dose will usually be very small to prevent nausea. The dosage is progressively increased over a few weeks. But If nausea becomes a problem, then the patient may prescribe anti-sickness medication.

Monoamine oxidase-B inhibitors: this medication include Selegiline and Rasagiline, are another substitute to levodopa for treating early Parkinson's disease. They hunk the effects of a brain chemical that destroys dopamine. These both medications help in to manage the symptom of the PD and their affects are same as levodopa. This inhibitor can cause an extensive range of side effects, with nausea, headache and abdominal pain [89-91].

VI. CONCLUSION

Parkinson's is a neurological disorder that is mostly considered by problems with body actions. At present there is no known cause of understanding of why a person develops Parkinson's disease, and also there are no formerly cure for PD, but there are some medication and therapy which can manage the symptoms of the PD. Gene therapy, which includes transporting normal genes directly to your brain to help avoid the death of brain cells, is one example[92].

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