PARKINSON'S DISEASE - A SURVEY

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Abstract-Technology changes on day to day basis, what is most admired today will be obsolete after a while. On the other side enormous new diseases are identified in medical science. Identification of those new diseases in real life itself has become a challenging issue. High level research is required for diagnosis and medication for this recent diseases. Alzheimer, dystonia, Guillain-Barre, Cerebral Palsy, Bell's palsy, Parkinson's and myositis are recent diseases in neurology. Indians are suffering with Parkinson's disease even without knowing that it is Parkinson. This research is an effort in identifying the symptoms of Parkinson's disease (PD) and its effects on the human body. PD is a neuro disorder problem, which is chronic and progressive. In 1990s, PD occurredonlytooldagehuman. But, now it became common for mid ages also due to heredity and environmental factors. However, the primary cause of the PD is unpredicted and this article outlines the PD, symptoms, stages, conformation, treatments methods and few survey is discussed in detail.

Keywords: Parkinson's disease, epidemiology, neurology, heredity, environmental factors

I. Introduction

Around one million people in United States of America are affected by Parkinson's disease. It malfunction the vital nerve cells in the brain called neurons.PDfirst affects neurons in substantianigraofbrain.These dying neurons will produce dopamine, a chemical that sends message to a part of the brain and controls movement and co-ordination of human body movement. As PD progresses, the amount of dopamine produced in the brain will decrease and lead touncontrollable

body parts movement. The motor symptoms are tremor of the hands, arms, legs, jaw and face. It also causebradykinesiaresults in slow walking and arm movements.One of the symptoms of PD is rigidity of limbs and trunk. In course of time PD causepostural instability which will bend the human body, which will lead to impaired balance and co-ordination. The second level motor symptoms arefreezing, micrographic, mask like facial, unwanted body accelerationandspeechdisorder. The Non- Moto Symptoms of PD are

Lewy body, loss of sense of smell, constipation, Sleep disorder, Mood disorderandorthostatic hypotension.

A. Rating Scale Of Parkinson's Disease

1-2 is mentioned aslow rated, inwhich occasionally motor symptoms will be sensed in human body. Treatment at this stage can control the progress of PD. In 2-3 – Medium rated, frequently motor and non motor symptoms will occur. Compulsory medication for this stage is necessary.4-5 is rated as highestwitnessing enormous changes. Patient need a compulsory assistance for movement, shrinkages in hand writing, voice and physical appearance may be changed.In addition cognitive difficultiesand treatment side effect will affect the patient.

B. The Stages Of Parkinson's Disease

In stage one, mild symptoms such as tremors or shaking in a limb will be sensed. Notable changes in human posture, walking and facial expressions also will be predicted.In stage two, bilateral which will affect both the limbs and sides of the body. Moreover uneasiness inwalking, imbalance and physical inability will happen. In stage three, standing and walking inabilityand Noticeable incapability in physical movements will happen. Rigidity and bradykinesia will occur in stage 4. Stage 5 is completely be bed retired.

C.Confirmation of PD

PD is confirmed for a human with all the following

1. Autopsy

Based on the presence of Lewy bodies in particular region of the brain and reduced number of dopaminergic neurons in the substantianigra.

2. Patho Physiology

Prominent pathological lesion observed in the based ganglia of the brain. It is gradual loss of pigmented cells, mainly in the compact zone of the substantianigra.

3. Caudata Nucleus

How the brain learns specifically storing and processing of memories. It work as a feedback processor, which means it uses information from past experience to influence future.

Loss of dopaminergic neurons results in deficit of dopamine in all the components of the basal ganglia. The dopamine loss, the remaining dopamine neurons increase their dopamine turnover.

4. Oxidative stress

A number of studies support the role of oxidative stress in the degenerative of dopamine neurons, which have been consistently shown to be particularly vulnerable to reactive oxygen species. Mitochondrial dysfunction has been reported in a large percentage of people with PD. Stress mechanism, as environmental pollutants including nitrogen dioxide (from vehicle exhaust fumes), halogenated hydrocarbons and pesticides may cause free radical reactions, either spontaneously or by active intermediates produced through their metabolism by the cytochrome p-450 enzyme system.

5. Apoptosis

Apoptosis is a mode cell death by which cells are programmed to suicide by forming fragments that are phagocytized by other cells. Apoptosis has been suggested by some as the mode of death of cells in PD. It has been suggested the apoptosis may be chemically induced by the accumulation of

free radicals generated either outside or inside cell. Which is consistent with the oxidation stress theory.

d. Treatments

According to the literature, there is no cure or treatment for Parkinson's disease. But, some treatments are there to slow down the disease progress. The treatments are

1. Medication

2. Surgery

1. Medication

The Parkinson's disease symptoms are occurring due to low level segregation of dopamine in substanianigra in the brain. The medication aimed to increase the dopamine level in the brain, which will regulate motor actions and muscle stiffness. Some of the medications are dopamine, Levodopa and Carbidopa. As disease progress these medication are useless. Then, they need increase the dosage. In turn it will lead more complications in terms of side effects. The side effects are involuntary movements, constipation, depression and dizziness etc.

2. Surgery

If the medication is no more useful for treating Parkinson's disease, then next option is surgery.

1. Deep brain stimulation

2. Thalamotomy

3. Pallidotomy

4. Subthalamotomy

Deep brain stimulation

It is the surgical procedure used to treat several disabling neurological symptoms. It will enable the neurons and also regulate the tremor, rigidity, stiffness, slowed movement and walking difficulties. An electrode is implanted deep inside the brain, where movement is controlled. Electrical impulses are sent from the neurostimulator, along the wire, and into the brain via the electrode. They interfere with the electrical signals that cause symptoms, effectively blocking them. Deep brain stimulation is generally used when the patient is in the advanced stage of PD, and has unstable medication responses. The procedure has some risks, including brain hemorrhage and infection. Patients who do not respond to carbidopa-levodopa therapy do not benefit from deep brain stimulation.

Thalamotomy

It is removed by cutting. The thalamus is a tiny part of the brain. The procedure may help to reduce tremor. Thalamotomy is rarely performed these days. It may be used for patients with tremor who have not responded to medication. The procedure does not improve slow movement, walking difficulties or speech problems.

Pallidotomy

Since the introduction of deep brain stimulation, this procedure is rarely done. The globuspallidus, a part of the brain, may be overactive in patients with Parkinson's disease, causing a different part of the brain which controls movement to become less active. The surgeon destroys a small part of the globuspallidus by creating a scar, resulting in less activity in that area of the brain, which in turn may help relieve movement symptoms, such as rigidity and tremor.

Subthalamotomy

It is rarely performed these days. The subthalamus, a very small area of the brain, is destroyed.

Alternative Therapies

According to the National Health Service (NHS), UK, up to 40% of patients with Parkinson's disease in the UK use some type of alternative therapy, such as massage, acupuncture or herbal remedies. Patients using herbal remedies and/or supplements should tell their doctor

Nutrition

Some patients with Parkinson's disease suffer from constipation. A diet high in fiber, as well as adequate fluid consumption is important for reducing the number of incidences as well as severity of constipation.

Postural (Orthostatic) Hypotension

Low blood pressure when changing position is another problem experienced by some Parkinson's disease patients.

Doctors may advise an increase in salt and fluid intake, as well as avoiding products with caffeine in the evening, eating many small meals a day, and abstaining from alcoholic drinks.

Causes Parkinson's disease?

The exact causes of the Parkinson's disease is unknown. But,itmaycause by a combination of genetic and environmental factors, which may vary from person to person. Scientists have identified aging is an important risk factor. Two to four percent risk for Parkinson's disease among people over age 60.

The different environmental risk factors for Parkinson's disease are families and society, earnings loss of affecting individuals, family caregivers, poorer quality of life, caregiver burden, disrupted family relationships, decreased social and leisure activities, deteriorating emotional wellbeing, rural residency, farming, well water consumption, pesticide exposure, Metals and solvents. Among these, the analysis result suggested that regular exposure to pesticide and head injury were important risk factor for PD.

II. Literature Survey

A total 557 patients belongs to both rural and urban area of north Karnataka were interviewed with a structural questionnaire about Parkinson's disease (PD). The clinical and studies concluded that men were affected with PD than women. The study showed that 90.8 % of the patients having tremors, 32.7% of the patients having slowness and 8.1% of the patients having dyskinesia. The Questionnaire were collected from the patients aging below 60 to 79 years [1]. This study was undertaken between 2003 and 2007 with a validated questionnaire. The data was collected from both slum and non slum people. Then the data was analyzed and conformed by a doctor. The continuous analyzes is done over the period of one year. A total population of 100,802 patients was screened. The prevalence rate and average annual incidence rate were 52.85 / 100000 and 5.71/100000 per year respectively. The study concluded that the slum populations significantly have decreased prevalence rate with age compared with non slum population [2]. The Parkinson's study was carried out based on the patient's age, gender and race/ethnicity. 91% of newly diagnosed Parkinson's disease patients within 5 months of the primary care provider's first noting Parkinsonism, with the median time being 27 days [3]. This study analyzed the research output of Parkinson's disease in India during 2001-11. The parameter included were publication share, citation impact, share of international collaborative papers, contribution of major collaborative partner, contribution of various subject fields. Scopus citation database has been used to retrieve the data for 10 years (2002-2011) by searching the keywords of PD in the combination of title, abstract and keywords fields. Among top 20 most productive countries, the India ranked in 16th position. India contributed 458 papers about PD [4-5]. Neuro epidemiology development in India was reviewed. Analyze of data on prevalence and pattern of neurological disorder including epilepsy, stroke, PD and tremor were carried out [6]. Epidemiology of PD and movement disorders studies were reviewed. The study described about prevalence movement disorder, methodological issues and potential of epidemiological research in a country with multiple ethnic races and environmental risks for PD [7]. Epidemiology of PD, prevalence and incidence of PD in Asians were reviewed. Two broad view of analysis was focused 1. Demographic information of people 2. Environmental factors associated with PD. In environmental factors, occupational, lifestyle, dietary and pharmacological factors were considered [8-9]. The systematic review of prevalence and incidence of PD was carried out from articles published from 1965 to 2008. The articles taken from MEDLINE and EMBASE. The twenty one original articles taken for study. The concluded that PD in Asian countries was slightly lower than that in Western countries [10]. Systematic review of prevalence and incidence of PD in the people's republic of China was taken. The possible future research directions were discussed [11].

III. Conclusion

The epidemiology about PD is done. The symptoms, stages and treatments of PD is discussed. The prevalence and incidence of PD in Asia and the people's republic of China has been reviewed. The survey concludes that the men have more chance to get PD than female. The chances to get PD for slum people is likely to be lesser than the non slum people. The people affected with PD in Asia is lesser than the Western countries. In future, more information may be include to find the causes of PD.

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