Neuro-Degenerative diseases

Degenerative nerve diseases affect many of your body's activities, such as balance, movement, talking, breathing, and heart function. Many of these diseases are genetic. Sometimes the cause is a medical condition such as alcoholism, a tumor, or a stroke. Other causes may include toxins, chemicals, and viruses. Sometimes the cause is unknown.

Degenerative nerve diseases include

- Alzheimer's disease
- Amyotrophic lateral sclerosis
- Friedreich's ataxia
- Huntington's disease
- Lewy body disease
- Parkinson's disease
- Spinal muscular atrophy

Degenerative nerve diseases can be serious or life-threatening. It depends on the type. Most of them have no cure. Treatments may help improve symptoms, relieve pain, and increase mobility.

Alzheimer's disease:

Alzheimer's disease (AD) is the most common form of dementia among older people. Dementia is a brain disorder that seriously affects a person's ability to carry out daily activities.

AD begins slowly. It first involves the parts of the brain that control thought, memory and language. People with AD may have trouble remembering things that happened recently or names of people they know. A related problem, mild cognitive

impairment (MCI), causes more memory problems than normal for people of the same age. Many, but not all, people with MCI will develop AD.

In AD, over time, symptoms get worse. People may not recognize family members. They may have trouble speaking, reading or writing. They may forget how to brush their teeth or comb their hair. Later on, they may become anxious or aggressive, or wander away from home. Eventually, they need total care. This can cause great stress for family members who must care for them.

AD usually begins after age 60. The risk goes up as you get older. Your risk is also higher if a family member has had the disease.

No treatment can stop the disease. However, some drugs may help keep symptoms from getting worse for a limited time.

Amyotrophic lateral sclerosis:

Amyotrophic lateral sclerosis (ALS) is a nervous system disease that attacks nerve cells called neurons in your brain and spinal cord. These neurons transmit messages from your brain and spinal cord to your voluntary muscles - the ones you can control, like in your arms and legs. At first, this causes mild muscle problems. Some people notice

- Trouble walking or running
- Trouble writing
- Speech problems

Eventually, you lose your strength and cannot move. When muscles in your chest fail, you cannot breathe. A breathing machine can help, but most people with ALS die from respiratory failure.

The disease usually strikes between age 40 and 60. More men than women get it. No one knows what causes ALS. It can run in families, but usually it strikes at random. There is no cure. Medicines can relieve symptoms and, sometimes, prolong survival

Friedreich's ataxia:

Friedreich's ataxia is an inherited disease that damages your nervous system. The damage affects your spinal cord and the nerves that control muscle movement in your arms and legs. Symptoms usually begin between the ages of 5 and 15. The main symptom is ataxia, which means trouble coordinating movements. Specific symptoms include

- Difficulty walking
- Muscle weakness
- Speech problems
- Involuntary eye movements
- Scoliosis (curving of the spine to one side)
- Heart palpitations, from the heart disease which can happen along with Friedreich's ataxia

People with Friedreich's ataxia usually need a wheelchair 15 to 20 years after symptoms first appear. In severe cases, people become incapacitated. There is no cure. You can treat symptoms with medicines, braces, surgery, and physical therapy.

Huntington's disease:

Huntington's disease (HD) is an inherited disease that causes certain nerve cells in the brain to waste away. People are born with the defective gene, but symptoms usually don't appear until middle age. Early symptoms of HD may include uncontrolled movements, clumsiness, and balance problems. Later, HD can take away the ability to walk, talk, and swallow. Some people stop recognizing family members. Others are aware of their environment and are able to express emotions.

If one of your parents has Huntington's disease, you have a 50 percent chance of getting it. A blood test can tell you if have the HD gene and will develop the disease. Genetic counseling can help you weigh the risks and benefits of taking the test.

There is no cure. Medicines can help manage some of the symptoms, but cannot slow down or stop the disease.

Lewy body disease:

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For: M Sc IV Semester Zoology Paper I Neurophysiology and Eco toxicology

What is Lewy body dementia (LBD)?

Lewy body dementia (LBD) is one of the most common types of dementia in older adults. Dementia is a loss of mental functions that is severe enough to affect your daily life and activities. These functions include

- Memory
- Language skills
- Visual perception (your ability to make sense of what you see)
- Problem solving
- Trouble with everyday tasks
- The ability to focus and pay attention

What are the types of Lewy body dementia (LBD)?

There are two types of LBD: dementia with Lewy bodies and Parkinson's disease dementia.

Both types cause the same changes in the brain. And, over time, they can cause similar symptoms. The main difference is in when the cognitive (thinking) and movement symptoms start.

Dementia with Lewy bodies causes problems with thinking ability that seem similar to Alzheimer's disease. Later, it also causes other symptoms, such as movement symptoms, visual hallucinations, and certain sleep disorders. It also causes more trouble with mental activities than with memory.

Parkinson's disease dementia starts as a movement disorder. It first causes the symptoms of Parkinson's disease: slowed movement, muscle stiffness, tremor, and a shuffling walk. Later on, it causes dementia.

What causes Lewy body dementia (LBD)?

LBD happens when Lewy bodies build up in parts of the brain that control memory, thinking, and movement. Lewy bodies are abnormal deposits of a protein called alpha-synuclein. Researchers don't know exactly why these deposits form. But they do know that other diseases, such as Parkinson's disease, also involve a build-up of that protein.

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Who is at risk for Lewy body dementia (LBD)?

The biggest risk factor for LBD is age; most people who get it are over age 50. People who have a family history of LBD are also at higher risk.

What are the symptoms of Lewy body dementia (LBD)?

LBD is a progressive disease. This means that the symptoms start slowly and get worse over time. The most common symptoms include changes in cognition, movement, sleep, and behavior:

- **Dementia**, which is a loss of mental functions that is severe enough to affect your daily life and activities
- **Changes in concentration, attention, alertness, and wakefulness.** These changes usually happen from day to day. But sometimes they can also happen throughout the same day.
- **Visual hallucinations**, which means seeing things that are not there
- **Problems with movement and posture**, including slowness of movement, difficulty walking, and muscle stiffness. These are called parkinsonian motor symptoms.
- **REM sleep behavior disorder**, a condition in which a person seems to act out dreams. It may include vivid dreaming, talking in one's sleep, violent movements, or falling out of bed. This may be the earliest symptom of LBD in some people. It can appear several years before any other LBD symptoms.
- **Changes in behavior and mood**, such as depression, anxiety, and apathy (a lack of interest in normal daily activities or events)

  In the early stages of LBD, symptoms can be mild, and people can function fairly normally. As the disease gets worse, people with LBD need more help due to problems with thinking and movement. In the later stages of the disease, they often cannot care for themselves.

How is Lewy body dementia (LBD) diagnosed?

There isn't one test that can diagnose LBD. It is important to see an experienced doctor to get a diagnosis. This would usually be specialist such as a neurologist. The doctor will

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- Do a medical history, including taking a detailed account of the symptoms. The doctor will talk to both the patient and caregivers.
- Do physical and neurological exams
- Do tests to rule out other conditions that could cause similar symptoms. These could include blood tests and brain imaging tests.
- Do neuropsychological tests to evaluate memory and other cognitive functions

LBD can be hard to diagnose, because Parkinson's disease and Alzheimer's disease cause similar symptoms. Scientists think that Lewy body disease might be related to these diseases, or that they sometimes happen together.

It's also important to know which type of LBD a person has, so the doctor can treat that type's particular symptoms. It also helps the doctor understand how the disease will affect the person over time. The doctor makes a diagnosis based on when certain symptoms start:

- If cognitive symptoms start within a year of movement problems, the diagnosis is dementia with Lewy bodies
- If cognitive problems start more than a year after the movement problems, the diagnosis is Parkinson's disease dementia

What are the treatments for Lewy body dementia (LBD)?

There is no cure for LBD, but treatments can help with the symptoms:

- **Medicines** may help with some of the cognitive, movement, and psychiatric symptoms
- **Physical therapy** can help with movement problems
- **Occupational therapy** may help find ways to more easily do everyday activities
- **Speech therapy** may help with swallowing difficulties and trouble speaking loudly and clearly
- **Mental health counseling** can help people with LBD and their families learn how to manage difficult emotions and behaviors. It can also help them plan for the future.
- **Music or art therapy** may reduce anxiety and improve well-being

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Support groups can also be helpful for people with LBD and their caregivers. Support groups can give emotional and social support. They are also a place where people can share tips about how to deal with day-to-day challenges.

Parkinson's disease:

Parkinson's disease (PD) is a type of movement disorder. It happens when nerve cells in the brain don't produce enough of a brain chemical called dopamine. Sometimes it is genetic, but most cases do not seem to run in families. Exposure to chemicals in the environment might play a role.

Symptoms begin gradually, often on one side of the body. Later they affect both sides. They include

- Trembling of hands, arms, legs, jaw and face
- Stiffness of the arms, legs and trunk
- Slowness of movement
- Poor balance and coordination

As symptoms get worse, people with the disease may have trouble walking, talking, or doing simple tasks. They may also have problems such as depression, sleep problems, or trouble chewing, swallowing, or speaking.

There is no specific test for PD, so it can be difficult to diagnose. Doctors use a medical history and a neurological examination to diagnose it.

PD usually begins around age 60, but it can start earlier. It is more common in men than in women. There is no cure for PD. A variety of medicines sometimes help symptoms dramatically. Surgery and deep brain stimulation (DBS) can help severe cases. With DBS, electrodes are surgically implanted in the brain. They send electrical pulses to stimulate the parts of the brain that control movement.

Spinal muscular atrophy:

Spinal muscular atrophy (SMA) is a genetic disease that attacks nerve cells, called motor neurons, in the spinal cord. These cells communicate with your voluntary muscles - the ones you can control, like in your arms and legs. As the neurons die,

the muscles weaken. This can affect walking, crawling, breathing, swallowing, and head and neck control.

SMA runs in families. Parents usually have no symptoms, but still carry the gene. Genetic counseling is important if the disease runs in your family.

There are many types of SMA. Some of them are fatal. Some people have a normal life expectancy. It depends on the type and how it affects breathing. There is no cure. Treatments help with symptoms and prevent complications. They may include machines to help with breathing, nutritional support, physical therapy, and medicines.

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