

Causes of amyotrophic lateral sclerosis (als)



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Amyotrophic lateral sclerosis (ALS), which is often called to as “ Lou Gehrig’s Disease” in the Americas, is a progressive nervous system degenerating disease that affects nerve cells in the brain and in the spinal column. Motor neurons go from the brain to the spinal cord and to the muscles scattered throughout the body. The degeneration of the motor neurons in ALS eventually leads to death. When the motor neurons wither away, the ability of the brain to control muscle movement is lost. With voluntary muscle action progressively affected, patients in the later stages of the disease may eventually become totally paralyzed. (<http://www.alsa.org/about-als/what-is-als.html>)

ALS is often called Lou Gehrig’s disease after Lou Gehrig, a hall of fame baseball player for the New York Yankees who was diagnosed with ALS in the 1930s, and passed away at a young age of 37. Englanders and Australians call it Motor Neurone Disease. The French refer to it as Maladie de Charcot, after the French doctor Jean-Martin Charcot, who first wrote about ALS in 1869. (<http://kidshealth.org/kid/growup/conditions/als.html#>)

Jean- Marie Charcot noted the first reports of the characteristics of ALS in 1874, and named the fatal syndrome based on what he found. He was a famous French neurologist who has been referred to as “ the Father of Neurology”. (<http://dev.nsta.org/evwebs/2150/history.htm>)

The name Amyotrophic lateral sclerosis comes from the Greek language. The “ A” in Amyotrophic means no, “ Myo” means muscle, and “ Trophic” means

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nourishment. Literally, “ No muscle nourishment.” When a muscle is atrophic, it wastes away. “ Lateral” identifies the area in a person’s spinal column where portions of the nerve cells that signal and control the muscles are located. As the area degenerates, it leads to hardening (“ sclerosis”) of the region. (www. alsa. org)

As motor neurons degenerate, they can no longer send impulses to the muscles that normally result in muscle movement. The first signs and symptoms of ALS are so unnoticeable that they are often overlooked. The first few symptoms include stiffness, cramping, muscle twitching, or weakness. Victims of ALS may develop speech impediments and later, difficulty chewing and swallowing. Affect individuals may experience malnutrition because of a considerable lower food intake due to dysphagia and an increase in their body’s metabolism due to prolonged illness. The arms and legs begin to look thinner as muscle tissue wastes away. Individuals with ALS lose the ability to walk and almost all of their strength. Certain individuals eventually become dependent on a wheelchair. Over time, muscle weakness causes most individuals to lose the use of their arms and hands. Breathing becomes increasingly difficult because the muscles of the respiratory system weaken. Most people with ALS will usually die from lung failure within two to ten years after the signs and symptoms of ALS first appear. However, disease progression varies widely among victims of ALS. ([http://www. ninds. nih. gov/disorders/amyotrophiclateralsclerosis/detail_ALS. htm](http://www.ninds.nih.gov/disorders/amyotrophiclateralsclerosis/detail_ALS.htm))

The body has hundreds of nerves. There are those involved in the process of memory, thinking, detecting sensations, and others for hearing, vision, and <https://assignbuster.com/causes-of-amyotrophic-lateral-sclerosis-als/>

other bodily functions. The nerves that are affected when a person with ALS are the motor neurons that provide voluntary movements and muscle power. Examples of voluntary movements are waving your arms or to dance; these actions are controlled by the muscles in the arms and legs, respectively.

(www.alsa.org)

The heart and the digestive system are also made of muscle but a different kind, and their movements are involuntary. When the heart beats or a meal is consumed and digested, it happens automatically. Therefore, the heart and digestive system are not involved in ALS. Breathing also may seem to be involuntary, but ALS may eventually have an impact on breathing. (w)

Eventually, all muscles under voluntary control are affected, and individuals lose their strength and the ability to move their legs, arms, and the rest of the body. When muscles in the chest wall and diaphragm fail, people cannot breathe without ventilator support. Most people with ALS will usually die from respiratory failure, often within three to five years from the beginning of symptoms. However, only a small percent of those with ALS will live for ten or more years. (<http://www.ninds.nih.gov>)

However, even at an advanced stage, one can still see, hear, smell, and feel touch. The nerves that carry feelings of hot, cold, pain, pressure, or even being tickled, are not affected by Lou Gehrig's disease. In some people with ALS, the parts of the brain that allow us to think, remember, and learn also are affected by the disease. (<http://kidshealth.org>)

As many as twenty to thirty thousand people in the United States have Lou Gehrig's disease, and approximately five thousand people in the U. S. are

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diagnosed with the disease each year. ALS is one of the most common motor neuron diseases worldwide, and all people, regardless of race or ethnic background, can be affected. ALS more than often strikes people between forty and sixty years of age, but occasionally young and old people also can develop the disease. Men seem to have the disease more than women. In ninety percent of all ALS cases, the disease occurs at pure random with no clear risk factors. People with this quite sporadic disease do not have a family history of ALS, and family members are not considered to be at any risk for developing it. Approximately ten percent of ALS cases are inherited. The genetic form of ALS results from a chain of inheritance that requires only one parent to carry the gene needed for the disease. Mutations in more than a dozen genes have been found to cause familial ALS. (<http://www.ninds.nih.gov>)

Although this disease can strike anyone, it is extremely rare in children. According to the ALS Association, most people who develop Lou Gehrig's disease are adults between forty and seventy. Only two out of every hundred-thousand people will get the disease each year. Because it is not contagious, people cannot catch ALS from someone who has the disease. (<http://kidshealth.org>)

There have been plenty of famous people who have had ALS. Lou Gehrig is one of the more famous men to have had the disease. Another person is physicist Stephen Hawking, who's ALS has made him almost completely paralyzed and communicates through a voice synthesizer. While not as widely known as some others, the former Chinese president Mao Zedong died of ALS in 1976. Some others are Vietnam veteran Dieter Denglar, <https://assignbuster.com/causes-of-amyotrophic-lateral-sclerosis-als/>

musician Charles Mingus, and actor Michael Zaslow. ALS can strike anyone, regardless of race, ethnicity, or location. No minority group is more likely to contract the disease from a different group.

The cause of ALS is not yet understood, and researchers know not yet know why Lou Gehrig's disease strikes some people and not others. A groundbreaking step towards the answer of this question was made in 1993 when scientists supported by the National Institute of Neurological Disorders and Stroke discovered that mutations in the gene that produces the enzyme were associated with cases of genetic ALS. There is evidence that the mutant proteins can become toxic, though it's not clear why. Since then, over a dozen additional genetic mutations have been found and each of these gene discoveries has provided new insights into ALS. (<http://www.ninds.nih.gov>)

Researchers are also studying the role of environmental factors such as consumption of toxins, as well as behavioral and occupational factors or trauma. For example, studies of populations of military personnel who were deployed to the Gulf region during the 1991 war show that those veterans were more likely to develop ALS compared to military personnel who were not in the region.

In the more recent years, scientists have discovered a wealth of new understanding involving the physiology of the disease. While there is no cure or treatment today that stops or reverses the effects of ALS, there is one FDA approved drug —Riluzole —which slows the progression of ALS moderately. (<http://www.alsa.org>)

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