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Cerebral Palsy: Understanding the Disease

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Cerebral Palsy

Understanding the Disease

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Twenty years ago, Cynthia gave birth to her second daughter — Cathryn. Although being prematurely born, Cathryn seemed normal at first: precious, affectionate, and loving. However, after several months, Cynthia suddenly noticed that Cathryn did not always have control over her body; her legs stiffened when standing, and her neck could not be straightened. The heartbreaking moment came when Cathryn was diagnosed with cerebral palsy, a congenital disorder of muscle tone, balance, and movement..

"I knew she wasn't hitting the same growth and motor milestones like my older daughter," Cynthia said, sharing her daughter's story with the Center for Disease Control and Prevention (CDC), "We found out that we can't prevent and treat cerebral palsy without knowing the root cause of it."

Cerebral palsy (CP) is a disorder that affects the cerebral motor cortex, a region of the brain. CP results in posture abnormalities and difficulty with movement. The symptoms of cerebral palsy can be mild or very severe in children afflicted, depending on the location of their brain damage, but normally, the symptoms stay consistent through adulthood. Despite the distinction of CP from other medical conditions, it is often correlated with learning disorders, epilepsy, hearing, vision, and language problems. With appropriate treatment, most children with cerebral palsy have positive and recognizable improvements.

Cerebral palsy occurs during the brain growth period — the first two years of life. In about 70 percent of cases, cerebral palsy is caused by abnormalities occurring before birth that affect normal brain development. Birth inconveniences, including asphyxia, are assessed to represent around 6 percent of patients with inborn cerebral palsy. Indicators for cerebral palsy in newborns include premature births, low birth weight, developmental abnormalities while in the uterus, bleeding inside the cranium, and injury. A small percentage of people develop cerebral palsy after birth, which is due to cerebrum harm from bacterial meningitis, viral encephalitis, excess bilirubin in the blood, blunt head trauma, falling, or physical abuse.

Cerebral palsy is divided into three main clinical categories. The most common clinical category of CP is spastic cerebral palsy. Spastic cerebral palsy occurs as a result of injury in the motor cortex. Approximately 70 to 80 percent of patients with cerebral palsy experience this set of symptoms. Children with spastic cerebral palsy may exhibit spastic muscles as well as an ongoing state of increased muscle tone, making mobility quite difficult. This clinical category is again divided into three subgroups. In the spastic diplegia group, the child has a pronounced spastic abnormality in the lower extremities. Because the muscles tighten and contract, legs are always pulled inward, giving the child what is called a scissoring gait. The second group of children with spastic hemiplegia often presents with unilateral — right or left — spastic paralysis. Usually, the upper limb is affected more severely than the lower limb. The third and most severe is the spastic quadriplegia subgroup. Patients in this subgroup exhibit spastic paralysis of both upper and lower extremities along with the trunk muscles.

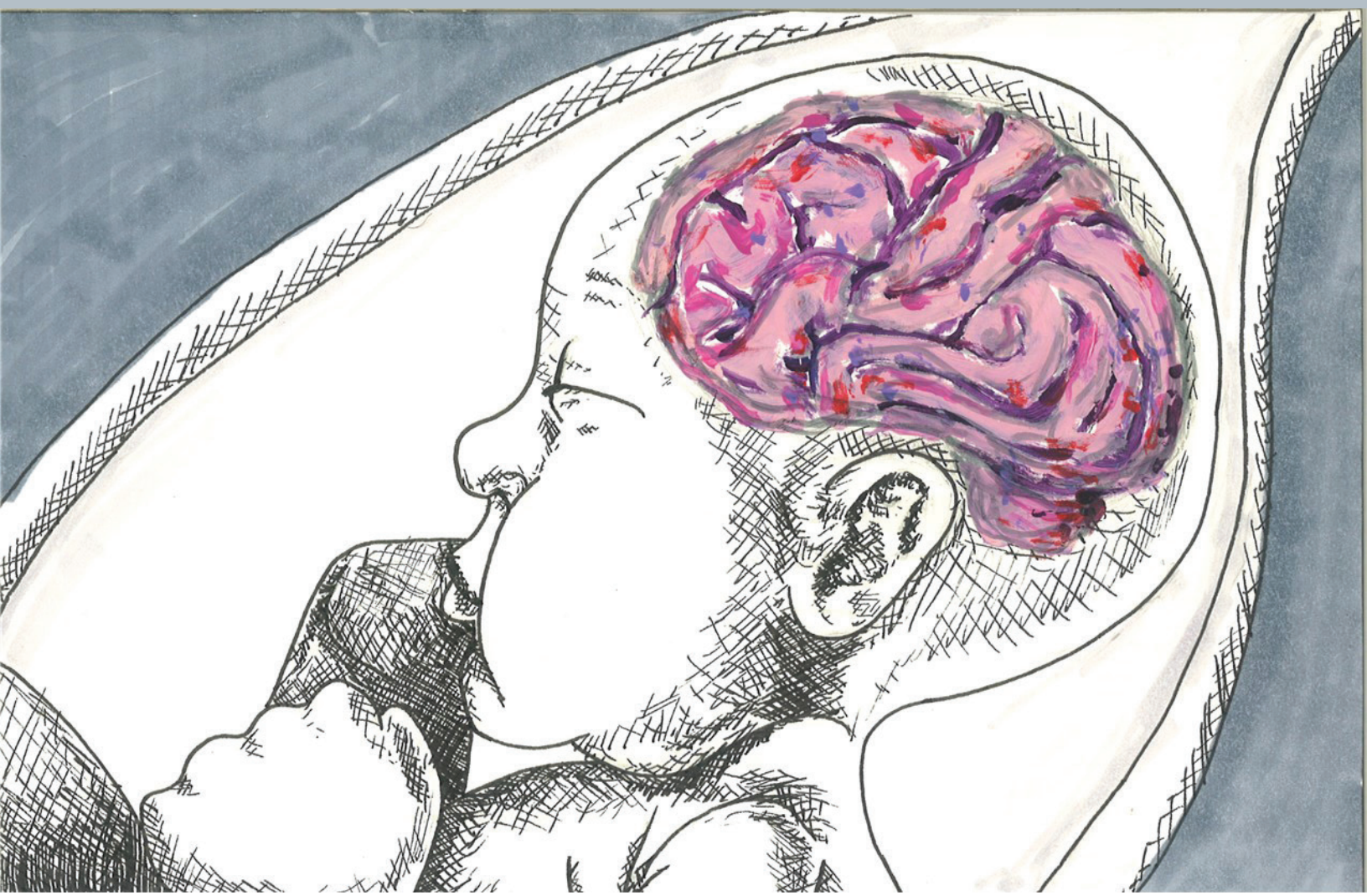
Cerebral palsy is divided into three main clinical categories. More than one form of the disease can be discovered within a patient.

Even face muscles are uncoordinated, causing the child to have difficulty in communicating and expressing emotions.

The second most common category of CP, athetoid, occurs in the basal ganglia; approximately 10 to 20 percent of patients with CP fit this category. This form of the disease is characterized by an erratic change in muscle tone — either increased or decreased. Children often exhibit uncontrolled, abnormal movements. These movements are categorized as having very slow rhythms, sometimes it appears to be similar to dancing Due to effects on motion control, it is difficult for the patient to have a normal sitting or gait. In addition, face and tongue muscles are affected, causing children difficulties swallowing or speaking.

Ataxic cerebral palsy is the least common group, with approximately 5 to 10 percent of individuals experiencing this type of CP. Ataxic CP is caused by brain damage in the cerebellum. The disease mainly affects posture, balance, and coordination of movements. Due to the disorder of posture control, the child's gait is often wobbly and the lumbar region usually sways. Thus, patients find it challenging to perform movements that require rhythm or precision such as clapping hands or writing.

Although it is a challenge to diagnose cerebral palsy before a child is two years old, early signs can be seen through an increase or decrease in muscle tone and with modern imaging techniques. For children with cerebral palsy, especially those with hemiplegia, the handedness tendency appears much earlier compared to other infants. Tests such as ultrasound, computed tomography (CT), magnetic resonance imaging (MRI), and electroencephalogram (EEG) are also widely used for diagnosis. In some cases, biochemical or genetic examinations can be conducted depending on the plans



and goals of clinical diagnosis.

Treatment of cerebral palsy requires a combination of many different disciplines to work with children and their families to draw out a specific plan that is suitable for each individual. The goal of this condition's treatment is to help children achieve the maximum possible intellectual and motor abilities, but cannot completely regain the lost abilities. If treatment is being conducted early and there is close coordination between different specialties and the patient's family, outcoming results are often very positive. Several treatments are taken into account as soon as a child is diagnosed with cerebral palsy. Physiotherapy — a treatment that involves only physical methods — increases a child's motor skills such as sitting, walking, improving muscle strength, and preventing muscle strain contraction. At times, medications will be prescribed to handle symptoms such as muscle spasms and abnormal movements. Another type of treatment is directly injecting botulinum toxin into contractile muscles, which significantly alleviates symptoms for at least several months. For some children with severe lower limb spasticity, selective removal of some nerve branches in the back that govern limb activity can permanently reduce the spasticity as well as improve their movement abilities. This surgery is usually done when the baby is between the range of two to seven years old.

Although cerebral palsy has not been fully studied, there are still ways to prevent this disorder in infants. First, there should be an improvement in the quality of care for women of childbearing age and pregnant women to minimize complications of pregnancy. Vaccines should be provided to prevent diseases such as meningitis and encephalitis. Early detection and treatment of children with cerebral palsy to limit disability are also needed.

It is difficult to give an exact answer to how long a child with cerebral palsy can live. The life expectancy of a patient depends largely on early childhood treatment. In a California study that ran from 1983 to 2002 on children with cerebral palsy, they found that, if the brain damage is not severe, 98.2 percent of children live longer than 20 years. If brain damage is severe, 85 percent of patients' life span is about 20 years. United Kingdom (U.K.) data is somewhat more positive: up to 99 percent of children with cerebral palsy without a major impairment live beyond the age of 30, and the data decreases to 95 percent for children with a serious disability. Therefore, focusing on treatment and care from relatives and family is essential to help children prolong and get in tune with life. The key to treatment success is the role of the parents and all caregivers. If they have confidence, determination, basic knowledge of the condition, and practical skills, children are more likely to make great progress in reducing their symptoms and gaining independence.• • •