

Chronic Traumatic Encephalopathy (CTE)

Chronic traumatic encephalopathy (CTE) is a progressive and fatal brain disease associated with repeated traumatic brain injuries (TBIs), including concussions and repeated blows to the head. It is also associated with the development of dementia. Studies have shown that people who experience TBI in early to midlife are two to four times more at risk of developing dementia in late life. This risk appears to be much higher in people with several TBIs, although more research is needed to confirm this.

What causes CTE?

Those at greatest risk for CTE are athletes who play contact sports (e.g., boxers, football players, etc.) and military veterans, likely due to their increased chances of enduring repeated blows to the head.

Symptoms

Research on CTE diagnosis, cause(s), symptoms, and risk factors is still in the early stages. Not all scientists agree on the symptoms of CTE, but the disease has been associated with:

- memory and thinking problems
- confusion
- personality changes
- and/or erratic behavior including aggression, depression and even suicidal thinking.

Other symptoms may include problems paying attention and organizing thoughts as well as difficulty with balance and motor skills. People may not experience these potential signs of CTE until years or decades after brain injuries occur.

Diagnosis

A diagnosis of CTE can only be made after death, when an autopsy can reveal whether the known brain changes of CTE are present. When CTE is suspected, a thorough medical history, mental status testing, neurological exams, brain imaging and more may be used to rule out other causes. Like Alzheimer's, CTE involves tau, a protein in nerve cells that has been associated with dementia. However, researchers have found that CTE has a unique pattern of abnormal tau buildup in the tissues around the blood vessels that is different from other brain diseases involving tau — including Alzheimer's. Because better imaging techniques are now available, studies are beginning to show that CTE is distinct from Alzheimer's. More research is needed to fully understand the brain changes that occur in CTE and how it is related to dementia.

Treatment

There is no cure or treatment for CTE, but certain medicines may be used to temporarily treat the cognitive (memory and thinking) and behavioral symptoms. Consult your doctor before taking any prescription or over-the-counter medication.

Research

Several organizations, including the National Institute of Neurological Disorders and Stroke and Brain Injury Research Institute are investing in research initiatives to learn more about CTE. The Alzheimer's Association has also invested more than \$2 million in research grants to learn more about CTE.