**Frontotemporal dementia**

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**Overview**

Frontotemporal dementia (FTD) is a type of dementia that affects the frontal and temporal lobes of the brain. It is a group of disorders that are characterized by changes in behavior, personality, language, and movement. FTD typically affects individuals who are between 45 and 65 years old and accounts for 5-10% of all cases of dementia**.** The prevalence of FTD varies depending on the population studied and diagnostic criteria used, but it is estimated to be between 15 and 22 cases per 100,000 people**.**

FTD is caused by the progressive degeneration of the nerve cells in the frontal and temporal lobes of the brain. The exact cause of FTD is unknown, but it is believed to be related to the abnormal accumulation of certain proteins in the brain.

**Symptoms and Signs**

FTD is a progressive disease that gradually impairs cognitive and social functions. The symptoms of FTD vary depending on which part of the brain is affected. Generally, FTD is characterized by a gradual and progressive decline in cognitive abilities, behavior, and language.

The symptoms of FTD can be broadly divided into three categories: behavioral, language, and motor.

*Behavioral symptoms*:

* Loss of inhibition and social appropriateness
* Impulsive or repetitive behaviors
* Changes in eating habits, such as overeating or loss of appetite
* Lack of empathy or sympathy
* Apathy or loss of motivation
* Reduced awareness of personal hygiene

*Language symptoms*:

* Difficulty finding words or forming sentences
* Changes in speech, such as a reduction in speech output or difficulty with pronunciation
* Difficulty understanding language, including verbal and written communication

*Motor symptoms*:

* Muscle weakness or atrophy
* Difficulty with coordination and movement, including tremors or rigidity
* Changes in gait or balance

It is important to note that the specific symptoms of FTD can vary greatly depending on the subtype of the disease and the areas of the brain affected. In some cases, individuals with FTD may experience symptoms related to memory loss and executive function, similar to those seen in Alzheimer's disease. However, FTD is typically associated with a more rapid decline in cognitive and behavioral function, often leading to significant impairment within a few years of symptom onset.

**Subtypes**

There are several subtypes of FTD, each with their own unique characteristics and patterns of presentation. The most common subtype of FTD is behavioral variant FTD, accounting for approximately 60% of cases. The other subtypes include semantic dementia, progressive non-fluent aphasia, and motor neuron disease-FTD.

Behavioral variant FTD (bvFTD): This type of FTD primarily affects behavior, personality, and emotional regulation. Individuals with bvFTD may exhibit disinhibition, apathy, social withdrawal, and changes in eating habits.

Semantic dementia: This type of FTD primarily affects language, specifically the ability to understand and produce words and meanings. Individuals with semantic dementia may have difficulty naming objects, understanding words and phrases, and comprehending written language.

Progressive non-fluent aphasia: This type of FTD primarily affects language production, specifically the ability to produce fluent speech. Individuals with progressive non-fluent aphasia may have difficulty speaking in a smooth and effortless manner, and may make grammatical errors and have difficulty with word finding.

Motor neuron disease-FTD (MND-FTD): This type of FTD is characterized by both motor neuron disease (a group of disorders that affect the motor neurons, which control movement) and FTD symptoms. Individuals with MND-FTD may have muscle weakness, difficulty speaking and swallowing, and changes in behavior and personality.

It's important to note that FTD can present in different ways and may overlap with other neurodegenerative disorders, such as Alzheimer's disease. A comprehensive evaluation by a healthcare professional, including neuroimaging and neuropsychological testing, is necessary to accurately diagnose FTD and determine the appropriate treatment plan.

**Genetics**

FTD can be caused by genetic and environmental factors, with genetic factors accounting for about 40% of cases.

There are several genes that have been associated with FTD, including the microtubule-associated protein tau (*MAPT*) gene, the progranulin (*GRN*) gene, and the chromosome 9 open reading frame 72 (*C9orf72*) gene. Mutations in these genes have been found to cause FTD in some cases.

Mutations in the *MAPT* gene, which provides instructions for making tau protein, can lead to the formation of abnormal tau protein aggregates in the brain. These aggregates can disrupt normal cellular function and lead to the death of nerve cells.

Mutations in the *GRN* gene, which provides instructions for making progranulin protein, can result in a deficiency of progranulin protein. This deficiency can lead to inflammation and abnormal protein buildup in the brain, ultimately leading to the death of nerve cells.

The *C9orf72* gene is associated with a unique form of FTD that is characterized by both motor neuron disease and dementia. In this form of FTD, an expansion of a repeating segment of DNA in the C9orf72 gene leads to the production of abnormal RNA molecules, which can disrupt normal cellular function and lead to the death of nerve cells.

While FTD is often associated with genetic mutations, it is important to note that not all cases of FTD are inherited. In many cases, the cause of FTD is unknown. Additionally, not all individuals who inherit a mutation in a gene associated with FTD will develop the disease. The age of onset, severity, and progression of FTD can also vary greatly among individuals with the same genetic mutation.

**Diagnosis**

The diagnosis of FTD can be challenging, as the symptoms can be similar to other types of dementia, such as Alzheimer's disease. The diagnosis is typically made based on a thorough medical history, physical exam, and neurological and psychological assessments. Imaging tests, such as MRI or CT scans, may also be used to help diagnose

**Treatment**

There is currently no cure for frontotemporal dementia (FTD), and treatment primarily focuses on managing symptoms and improving quality of life for affected individuals. The specific treatment approach will depend on the subtype of FTD and the individual's specific symptoms and needs.

Medications: Medications may be used to manage specific symptoms of FTD, such as depression, anxiety, or agitation. However, it's important to note that there is no medication currently available that can slow or stop the progression of FTD. Acetylcholinesterase inhibitors (AChEI) are a class of medications commonly used to treat symptoms of Alzheimer's disease and other forms of dementia. AChEI may even worsen some symptoms of FTD, such as apathy and disinhibition. For this reason, AChEI are not generally recommended as a first-line treatment for FTD.

Behavioral interventions: Behavioral interventions, such as environmental modifications, structured routines, and caregiver education and support, may be helpful in managing behavioral and social symptoms of FTD.

Speech and language therapy: For individuals with progressive non-fluent aphasia or semantic dementia, speech and language therapy may be beneficial in improving communication skills and maintaining language function.

Nutritional support: As FTD can affect eating habits and nutritional status, it may be necessary to provide nutritional support, such as a modified diet or tube feeding, to ensure adequate nutrition.

Supportive care: Supportive care, such as hospice care or palliative care, may be necessary in later stages of FTD to manage symptoms and improve quality of life.

While there is currently no cure for FTD, ongoing research is focused on better understanding the underlying causes of the disorder and developing new treatment approaches. Clinical trials are underway to evaluate potential new treatments, including medications and gene therapies, for FTD.