

## Frontotemporal dementia (FTD)

A topic in the Alzheimer's Association® series on understanding dementia.

### About dementia

Dementia is a general term for a decline in mental ability severe enough to interfere with daily life. Dementia is not a single disease; it's the umbrella term for an individual's changes in memory, thinking or reasoning. There are many possible causes of dementia, including Alzheimer's disease. Disorders grouped under the general term "dementia" are caused by abnormal brain changes. These changes trigger a decline in thinking skills, also known as cognitive abilities, severe enough to impair daily life and independent function. They also affect behavior, feelings and relationships.

Brain changes that cause dementia may be temporary, but they are most often permanent and worsen, leading to increasing disability and a shortened life span. Survival can vary widely, depending on such factors as the cause of the dementia, age at diagnosis and coexisting health conditions.

### Frontotemporal dementia or frontotemporal degeneration

Frontotemporal dementia refers to a group of disorders that cause progressive nerve cell loss in the frontal and temporal lobes of the brain. The nerve cell damage leads to loss of function in these brain regions, which can variably cause deterioration in behavior and personality, language disturbances or alterations in muscle and motor functions.

There are a number of different diseases that cause frontotemporal degeneration. The two most prominent are a group of brain disorders involving tau protein and others involving TDP43 protein. For reasons that are not yet known, these two groups tend to accumulate in the frontal and temporal lobes.

### Behavior variant frontotemporal dementia

Behavior variant frontotemporal dementia (bvFTD) is a condition characterized by prominent changes in personality, interpersonal relationships and conduct that often occurs in people in their 50s and 60s but can develop as early as their 20s or as late as their 80s. The most common behaviors are caused by the degeneration of neuronal cells in the front and temporal (side) areas of the brain. In bvFTD, the nerve cell loss is most prominent in areas that control conduct, judgment, understanding of how other people feel (empathy) and foresight, among other abilities.

Changes in personality might include disinterest in prior pastimes or family affairs. BvFTD could lead to loss of interpersonal skills that may result in more socially inappropriate activities, such as making inappropriate comments or acting in demeaning, rude or immodest fashion. In addition, a loss of empathy is common and catastrophically poor judgment could lead to major financial or personal crises.

### **Primary progressive aphasia**

Primary progressive aphasia (PPA) is the other major form of frontotemporal degeneration. Aphasia refers to a disorder of language that can involve problems with speaking, writing or comprehension. “Primary progressive” refers to the usual way in which PPA occurs, namely first and foremost as a disorder of language. PPA normally develops before the age of 65 but can also occur in late life. In contrast to bvFTD, the brain degeneration that occurs in PPA tends to be much more limited to the left hemisphere of the brain, where, for most people, language functions in the brain are located. Different speech and language difficulties arise depending on where the brunt of the degeneration occurs, which could include the left frontal, temporal or parietal lobes.

The two most distinctive PPA subtypes are one called nonfluent/agrammatic variant of PPA, in which speaking is very hesitant, labored, stuttered and telegraphic. The other distinctive PPA subtype is called the semantic variant of PPA, where the affected individual loses the ability to understand or formulate words in a spoken sentence.

### **Disturbances of motor (movement or muscle) function in frontotemporal degeneration**

Three disorders on the frontotemporal degeneration spectrum produce changes in muscle or motor functions with or without behavior changes (such as in bvFTD) or problems with language (like those in PPA). The first, amyotrophic lateral sclerosis (ALS, also known as motor neuron disease or Lou Gehrig’s disease), is a disorder of muscle weakness and wasting. The second, corticobasal syndrome, is a disorder in which the arms and legs become uncoordinated and stiff. The third, progressive supranuclear palsy (PSP), is a disorder in which there are problems with eye movement, as well as muscle stiffness, difficulty walking and changes in posture.

These disorders share the same abnormal changes in the brain that occur in bvFTD and PPA, except that the nerve cell degenerative changes are primarily in parts of the brain that affect the motor nerve cells responsible for coordinating muscle movement rather than behavior or language.

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### **Prevalence of frontotemporal degeneration**

Both bvFTD and PPA are far less common than Alzheimer's disease in individuals over age 65. However, in the 45 to 65 age range, bvFTD and PPA are nearly as common as younger-onset Alzheimer's disease. Only rough estimates are available, but there may be 50,000 to 60,000 people with bvFTD or PPA in the United States — the vast majority between ages 45 and 65. It is rare that these disorders occur outside of this age range.

In the United States, more than 30,000 people have ALS, and approximately 20,000 have PSP.

### **Diagnosis**

FTD is often misdiagnosed as Alzheimer's disease, depression, psychiatric disorders, vascular dementia or Parkinson's disease. Diagnoses of bvFTD and PPA are based on expert evaluation by a physician or neurologist who is familiar with these disorders. The person's symptoms and results from neurological examinations are the core of the diagnosis. Brain scans such as magnetic resonance imaging (MRI) and glucose positron emission scans are helpful diagnostic tests but must be evaluated together with the person's medical history and neurological examination. Occasionally, a psychiatric evaluation will also be ordered as part of the diagnostic process, such as when it is unclear if changes in behavior are due to depression or another psychiatric disturbance.

Since a decline in language abilities is the primary symptom of PPA, it is important to determine which components of language use are most affected, how severely affected they are and what can be done to improve communication. A speech-language pathologist evaluates different aspects of language in detail and can make recommendations for strategies to improve communication. Family members should be included in the treatment sessions to educate them about how to facilitate communication.

### **Causes and risks**

Frontotemporal degeneration is inherited in about a third of all cases. Genetic counseling and testing are available for individuals with a family history of frontotemporal degeneration. Family history is the only known risk factor for frontotemporal degeneration.

### **Outcomes**

Frontotemporal degeneration worsens, but speed of decline varies from person to person. Individuals living with FTD may experience muscle weakness and

coordination problems for many years, often requiring use of a wheelchair or confining them bedridden. These muscle issues can cause problems with swallowing, chewing, moving and controlling bladder and/or bowel function. As a result of their vulnerable physical state, many individuals living with frontotemporal degeneration die from complications with skin, urinary tract and/or lung infections.

### **Treatment**

No specific treatments are approved to treat any of the frontotemporal degeneration disorders. Some people may benefit from medications used to treat symptoms such as depression, apathy, irritability and disinhibition. Atypical antipsychotic medications used to treat agitation have an increased risk of side effects in people with brain disorders. Caution should be used. Speech therapy may be beneficial to individuals with PPA, as it can focus directly on the language skills that are impaired.

### **Resources**

#### **Association for Frontotemporal Degeneration (AFTD)**

theaftd.org  
866.507.7222

#### **Cure PSP**

psp.org

#### **National Aphasia Association**

aphasia.org

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