

Frontal Lobe Syndrome

Frontal lobe syndrome is a disorder affecting the prefrontal areas of the frontal lobe. The prefrontal lobe comprises the vast area of the frontal lobe anterior to the motor cortex and includes the undersurface of the frontal lobe, or the orbital region. The frontal lobe syndrome is said to be present when an individual who is previously capable of judgment and sustained application and organization of his life becomes aimless and improvident, and may lose tact, sensitivity, and self-control. Additionally, the individual affected by pathology in the prefrontal cortex may demonstrate impulsiveness and a failure to appreciate the consequences of his or her reckless behavior.¹ Frontal lobe syndrome can be caused by head trauma or may be the consequence of brain tumor, cerebrovascular accident, infection, or a degenerative cortical disease such as Pick's disease.² This syndrome represents an organic explanation for psychologically-based symptoms the patient may demonstrate.

Due to the anterior location of the prefrontal region, lesions to this region may be missed on a standard neurological examination or on a cursory mental status examination. The mental changes produced by lesions in the prefrontal region have led to the recognition of the "frontal lobe personality," as the patient tends to demonstrate specific personality changes which are more often revealed by a qualitative analysis of the patient's attitudes and types of errors produced rather than by a crude quantitative analysis of performance.³ The behavioral changes associated with bilateral prefrontal lesions may be difficult to measure, but family, friends, and employers may tell you that the patient is "no longer the same."⁴ Following a head injury, personality change in the injured patient is frequently reported and is often cited by family members as the most difficult and persistent problem that they face. Spouses of patients with frontal lobe syndrome relate that "it is like living with a different person," or that the patient "is not the person I married." Post-traumatic personality changes seen with injuries to the prefrontal region may result in marital break-up, social isolation, or unemployment, as some are fired from their jobs because of inadequate performance or because of offending their co-workers.^{1,2,4,5,6}

Compounding the problem in the identification of prefrontal involvement is the dissociation between how well a patient with a bifrontal lesion can appear during the initial office visit and how poorly they actually perform in real life.⁴ The consequences of damage to the prefrontal region include:

- alterations of attention
- concrete thinking
- perseveration
- reduced activity
- disturbed affect

The frontal lobe syndrome patient may demonstrate an attention deficit. The patient may appear slow,

uninterested, may lack spontaneity, may be easily distracted by irrelevant environmental stimuli, and may be unable to sustain attention. The patient's disinterest and easy distractibility may contribute to an apparent poor memory. The frontal lobe syndrome patient's memory is normal, but absentmindedness may lead to the appearance of a memory deficit as the patient literally "forgets to remember" and has the inability to focus attention long enough to form the rudiments of memory. These patients may fill in memory gaps with confabulation, or the elaboration of imaginary facts and experiences to fill in their gaps of knowledge or memory.^{2,3,4,5,6}

These patients may also engage in concrete thinking, which is an impairment of abstract thought. This trend may be identified during a basic mental status evaluation by the patient's inability to properly interpret proverbs.^{2,4} Closely linked to concrete thinking is the demonstration of "utilization behavior" in which the patient has the tendency to manually grasp and use objects presented within reach.^{2,3}

Perseveration is common in frontal lobe syndrome patients and is the tendency to maintain a previously established motor pattern without modifying the activity according to the demands of the changing environment because of an inability to shift from one line of thinking to another.^{2,3,4} When faced with a series of different motor tasks, the patient may end up performing one component of the series of tasks over and over again and may demonstrate great difficulty, or an inability to change motor patterns. Perseveration is one of the reasons for poor job performance in the frontal lobe syndrome patient.

These patients may demonstrate a diminution of spontaneous activity, a lack of drive, an inability to plan ahead, a lack of concern, and possible bouts of restlessness and aimless, uncoordinated behavior.¹⁻⁶ These findings may also contribute to poor job performance and family relations. Lastly, the frontal lobe syndrome patient may demonstrate a disturbance of affect ranging from complete apathy to disinhibition depending upon the location of the lesion. A lesion to the dorsolateral aspect of the prefrontal region may produce apathy, emotional blunting, and an indifference to the surrounding world. Their apathy may be noted during examination and may extend toward work and family. These patients may become incontinent, not because of a lesion affecting bladder function, but because of a disregard for their surroundings and the consequences of their actions. Conversely, a patient with a lesion to the orbital region of the prefrontal lobe, or the underside, may exhibit disinhibition, a failure to appreciate the consequences of one's actions, and euphoria with a tendency to jocularity. These patients may exhibit moria (childish excitement), joking and pathological punning, sexual indiscretions, and exhibitionism.¹⁻⁶ Thus, in the presence of an unremarkable neurological examination, these specific findings may be the only indication of an injury or an underlying pathology in the affected patient. Next month's column will stress simple testing procedures for frontal lobe syndrome.

References

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JULY 1995