

FRONTAL LOBE SYNDROME



Course: Neuropsychology CC-6 (M.A PSYCHOLOGY SEM II); Unit 3

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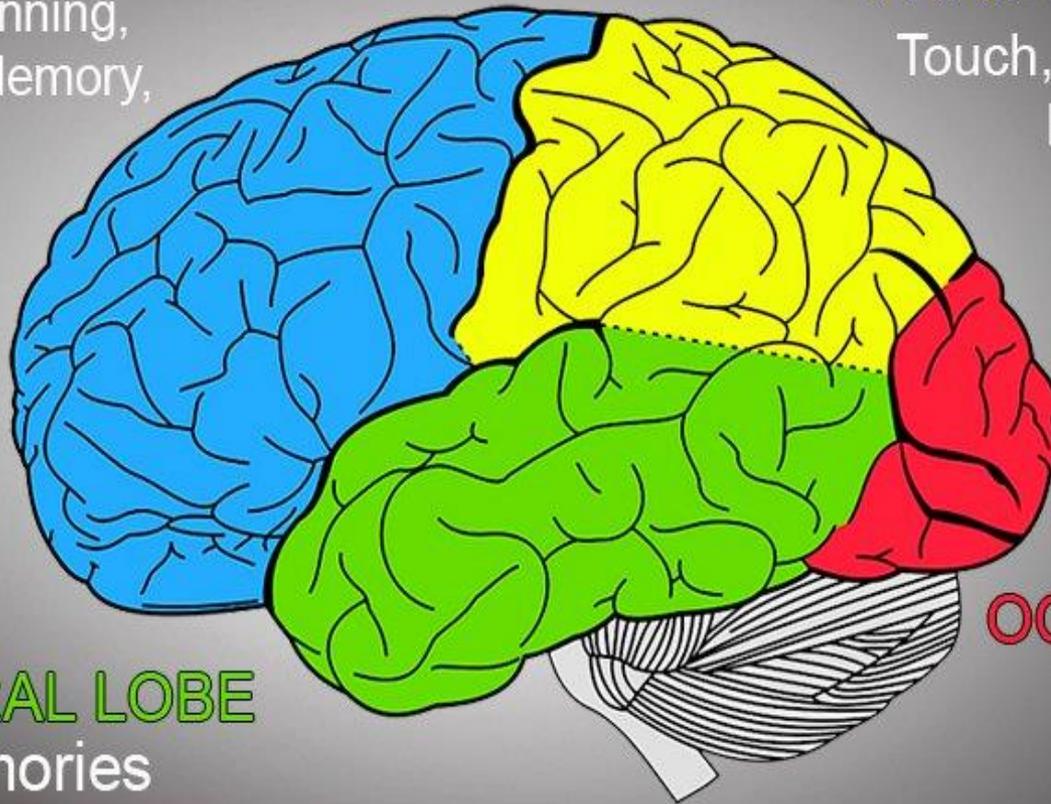
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FRONTAL LOBE

Thinking, Planning,
Short Term Memory,
Etc.

PARIETAL LOBE

Touch, Smell, Taste
Etc.



TEMPORAL LOBE
Memories

OCCIPITAL LOBE
Visual Activity

LOBULAR SYNDROME

Signs and Symptoms due to damage, lesion, injury, tumors, trauma, degenerative diseases etc of the lobes (frontal, parietal, occipital and temporal) is called **lobular syndrome**.

Sign are clinicians observations and objective findings.

Symptoms are the subjective experiences described by the patients.

A **Syndrome** is a group of sign and symptoms that together make up a recognizable condition.

FUNCTIONS OF FRONTAL LOBE

The frontal lobes are involved in

- Reasoning**
- Planning**
- Language**
- Memory**
- Motor functions**
- Problem solving**
- Spontaneity**
- Initiation**
- Judgement**
- Impulse control**
- Social and Sexual behavior**

FRONTAL LOBE SYNDROME

Frontal lobe Syndrome is an impairment of the **frontal lobe** that occurs due to damage, lesions, injury, tumour, **disease etc in the frontal lobe**. Frontal lobe lesion or damage results in impairment in a person's ability to make different types of functions:

• *Disturbances of motor function*

- Loss of fine movements
- Loss of strength
- Poor voluntary eye gaze
- Poor movement programming

• *Loss of divergent thinking*

- Reduced spontaneity
- Poor strategy formation

- ***Environment control of behavior***

- Poor response inhibition
- Risk taking and rule breaking
- Impaired associative learning

- ***Poor temporal memory***

- Poor recency memory
- Poor frequency estimate
- Poor self order recall
- Poor delayed response

- **Impaired spatial orientation**

- **Impaired social behavior**

- **Altered sexual behavior**

- **Impaired olfactory discrimination**

- **Disorders associated with damage to the face area**

DISTURBANCE OF MOTOR FUNCTIONS

- i. Loss of Fine movements-** Damage to the primary motor cortex is associated with loss of ability to make fine independent finger movement.
- ii. Loss of speed and strength of both hands.**
- iii. Movement Programming-** Poor at copying facial movement (right) and arm movement (left).
- iv. Difficulty in ordering the various components of the sequence into a chain of movements.**
- v. Alterations in voluntary eye gaze-** tends to glance over the picture more or less at random, and a change in the question about the picture failed to alter the direction of eye movements.
- vi. Echopraxia-** Repetition of action, pathological imitation of movement of one person by another.
- vii. Muscle rigidity-** state in which the muscles remain immovable seen in schizophrenia.
- viii. Akinesia-** lack of Spontaneous movement.

ATTENTION RELATED DISTURBANCES

One of the specific behavior deficits following frontal lobe damage is attention disorder, patients showing distractibility and poor attention, lack of concentration.

- i. Inattention to sensory field.
- ii. Easily distracted by environmental stimuli.
- iii. Poor selective and sustained Attention (unable to sustain attention).
- iv. Poor Attention Span.
- v. Alteration of Attention.
- vi. May appear slow, disinterested.

MEMORY RELATED DISTURBANCES

- i. **Poor Memory-** changes in organizational process in memory.
- ii. **Poor temporal memory-** Memory of sequence or chronological order. Memory for what has just happened and where it happened, as well as a memory for the order in which things have happened.(Ex- if presented two stimuli, frontal lobe damage patients are unable to recognize which stimuli they saw first.)
- iii. **Poor delayed response.**
- iv. **Impaired recognition memory.**
- v. **Source Amnesia-** Unable to remember source of information.
- vi. **Reduced ability to recollect contextual information.** (when and where saw a recent movie)
- vii. **Inability to retrieve newly learned information.**
- viii. **Poor self order recall-** must constantly compare the responses with those that still remain to be carried out.
- ix. **Deficit in retrieval from recent memory.**
- x. **Poor frequency estimate-** Patients with frontal lobe lesions fails to show much sensitivity to frequencies beyond(5-9)

DISTURBANCE IN EMOTION

- i. Blunted Affect-** Emotional/ Social withdrawal, reduced intensity of externalized feeling tone.
- ii. Aggressive, violent behavior.**
- iii. Apathy-** dulled emotional tone associated with detachment and indifference.
- iv. Inappropriate affect-** disharmony between the emotional tone and idea, thought or speech.
- v. Irritable mood-** easily annoyed and provoked to anger.
- vi. Occasionally , difficulty in understanding other's point of view** leading to anger and frustration.
- vii. Euphoria**
- viii. Inappropriate humor and telling pointless and boring stories.**

CHANGES IN INTELLECTUAL FUNCTIONS AND OTHER COGNITIVE FUNCTIONS

- i. **There is change in general intelligence** when intelligence is measured through complex intelligence tests.
- ii. **Changes in Inventiveness, fluency and loss of divergent thinking.**
 - a. Frontal lobe damage patients **show less flexibility in thinking.**
 - b. **Inventiveness is limited.**
 - c. **Loss of divergent thinking-** Zangwill suggestive that frontal lobe injury might interfere with divergent thinking.
- iii. **Strategy formation-** Patients with frontal lobe lesions are especially impaired at developing novel cognitive plan or strategies for solving problems.
- iv. **Behavioral spontaneity-**Zangwill referred it to as a “certain loss of spontaneity of speech” and a “difficulty in evoking appropriate words or phrases”.
- v. **Risk taking and Rule breaking-** Frontal lobe patients are distinguish from other patients in their common failure to comply with task instructions.
- vi. **Changes in the ability to do planning, to solve problem and to organize goal-directed behavior.**
- vii. **Response Inhibition-** Patients with frontal lobe lesions consistently perseverate on responses in a variety of test situations, particularly those in which there is changing demands.

CHANGES IN LINGUISTIC FUNCTIONS

- **Broca aphasia** (difficulty in speaking) or **Expressive aphasia**- It is a type of aphasia characterized by partial loss of the ability to produce language (spoken, manual or written), although comprehension generally remains intact.
- **Decreased verbal fluency**
- **Language perseveration or Echolalia**
- **Adynamia**-decreased spontaneity and voluntary action.

CHANGES IN SOCIAL BEHAVIOR AND PERSONALITY FROM HISTORY

Phineas Gage, who suffered a severe frontal lobe injury, reported by Harlow in 1868, has been called a case of dysexecutive syndrome. Dysexecutive syndrome consists of a number of symptoms which tend to occur together (hence it being described as a syndrome).

The syndrome Gage exhibited are **anger and frustration, Slight memory impairment and difficulty in planning and confusion.**

Benton, 1968, 1970 in his researches found significant changes in personality due to bilateral damage.

- i. **Impatient of restraint or advice when it conflicts with his desire.**
- ii. **Devising many plans of operations, which are no sooner arranged than they are abandoned in turn for other appearing more feasible.**
- iii. **Anxiety level is less than normal.**
- iv. **No worry for future.**
- v. **Impulsive behavior.**
- vi. **Euphoria.**

Blumer and Benson have described two type of Personality change after frontal lobe damage:

- 1. Pseudo-depression**
- 2. Pseudo-psychopathy**

Patients classified as being pseudo-depressed exhibit such symptoms as outward **apathy and indifference, loss of initiative, reduced sexual interest, little overt emotion, and little or no verbal output.**

Patients classified as pseudo-psychopathic exhibit **immature behavior, coarse language, change in sexual behavior, increased motor activity, and a general lack of social graces.**

Case history

At the age of 46, a successful salesman sustained a compound depressed fracture of the left frontal bone in a traffic accident. Prior to the accident, the patient had **enjoyed people, had many friends and talked freely. He was active in the community affairs, clubs, church and so forth. Whenever he entered any place there was change in the atmosphere, everything becomes more happy and friendly.**

Following the head injury, **he was quiet and remorse. He would speak when spoken to and made sensible replies but would then lapse into silence. He made no friend on the ward, spent most of the time sitting alone smoking. His sleep pattern was reversed. He could give detailed account of his life before accident but there was unreality to his conversation. When asked he denied his illness, state that he could return to work any time. He was totally unconcerned about his wife and children. Formerly a warm and loving father, he did not seem to care about his family. Eventually, the family ceased visiting because of his indifference and unconcern. (Blumer and Benson, 1975)**

CHANGES IN SEXUAL BEHAVIOR

Frontal lobe damage patients show symptoms of changes in sexual behavior. Injury to the frontal lobe can also cause difficulties with experiencing pleasurable and sexual sensations.....this can affect the survivor's own sexual behavior and their sexual partner's desire to engage in sex with them. To date, there are no such empirical studies largely because of social taboos against investigating people's sex lives.

IMPAIRED SPATIAL ORIENTATION

Semmes and her colleagues demonstrated that patients with frontal lobe lesions have a deficit in spatial orientation.

IMPAIRED OLFACTION

Potter and Butters investigated olfactory detection and discrimination in frontal lobe patients. Their results showed that olfactory detection was still normal, olfactory discriminatory ability was severely impaired in their patients.

SYMPTOMS ASSOCIATED WITH DAMAGE TO THE FACE AREA

Taylor and his colleagues – there is no significant loss in sensory or motor control of the face but result in deficits in phonetic discrimination, spelling, verbal fluency, and design fluency.

THANK YOU