

Temporal Lobe Syndrome

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Temporal Lobe

Temporal lobe lies below the lateral cerebral fissure or fissure of Sylvius. The lateral surface is divided into 3 gyri (Superior, middle and inferior) by two sulci.

- TL Comprises all the tissues that lie below the **sylvian fissure** (Lateral Fissure) and anterior to the occipital lobe.
- 17%-22% of the total cortex

Temporal Lobe

•Three main anatomy:

Superior TL

Middle TL

Inferior TL

The superior temporal gyri runs approximately parallel to the lateral cerebral fissure, beginning near the temporal pole in front and running back until, near its end, it turns upward for a short distance into parietal lobe.

Middle temporal gyri: It is often in two disconnected parts, divides the middle from the inferior temporal gyrus.

Inferior temporal gyri are a portion of which lies on the basal portion of the lobe.

Temporal Lobe

- 10 Brodman areas are found within temporal lobe
- Language, emotion and memory are primary function of the temporal lobe
- **It contains** : Primary auditory cortex, sec. auditory cortex, limbic structure, amygdala, Hippocampus

Temporal lobe syndrome

Kolb & Wishaw (1990) have identified eight principle symptoms of temporal lobe damage:

- 1) disturbance of auditory sensation and perception,
- 2) disturbance of selective attention of auditory and visual input,
- 3) disorders of visual perception,
- 4) impaired organization and categorization of verbal material,
- 5) disturbance of language comprehension
- 6) impaired long-term memory
- 7) altered personality and affective behavior
- 8) altered sexual behavior.

Temporal Lobe Syndrome

Left Temporal Lobe: deficit in Verbal memory, Processing of speech sound, Wernicke's aphasia (Mistaken with neologism), Amusia (inability to appreciate music)

Right Temporal Lobe: recognition of facial expression, deficit in non verbal memory, Agnosia for sound, Dysprosody (lack of tonal lilt)

Bilateral temporal lobe lesion

Korsakoff's syndrome

Kluver Bucy syndrome (Visual agnosia, apathy, disturbed sexual function, dementia, aphasia, amnesia)

Ictal phenomenon

Hallucination, illusion(visual, auditory and olfactory)

Bilateral temporal lobe lesion

Affective symptoms

Cognitive(déjà vu, jamais vu)

Impaired consciousness

automatism

Disorder of auditory sensation and perception:

Cortical deafness: primary auditory cortex (Brodmann area 41 & 42)

An absence of neural activity in auditory regions, **Bilateral cortical lesion**

Is an auditory disorder where the patient is unable to hear sound but has no apparent damage to the anatomy of the ear

Although patients appear and feel completely deaf, they can still exhibit some reflex response toward a loud sound.

Auditory agnosia: impaired recognition of (non-verbal) sound but intact language function

Temporal-parietal region

Failure in discrimination: auditory cortex plays in discrimination of two forms of perception-

problem in complex pattern recognition, rapidly presented stimuli

- **Speech perception:** discriminating speech sound, Temporal order(more in left temporal lobe)
- Aprosody - **Right lobe**
- **Music perception:** problem in discriminating the pitch of music or sound(right temporal lobe) (melody)
- **Visual perception: Milner(Inferior temporal lobe)**

They **describe** but not able to make interpretation of picture, impaired discrimination of picture in a complex figure, poor facial recognition and perception(**prosopagnosia**), poor shape recognition

- Disturbance of **visual and auditory input selection**. Selective attention to auditory input is disturbed (Dichotic listening)
- Difficulty using **contextual information**, in **extracting information from the environment** and using visual and social cues
- Poor recall of visual stimuli in right visual field(Left TL)
- Poor recall of visual stimuli in both visual field (Rt TL)

Difficulty in organization and categorization

- reduction in **both ability and fluency** in listing categories.
- (Read, 1981) Individuals with temporal lobes lesions have difficulty placing words or pictures into categories.
- **Left temporal lobe lesion**
- Pt. with posterior temporal lobe show dysphasic symptoms (can recognize the broader categorization but have difficulty with the more specific ones)

Memory deficit

Medial temporal lobe and temporal neo cortex(Hippocampus , amygdala)

Poor long term memory(anterograde memory)

Left temporal lobe- recall of verbal material

Rt. temporal lobe- recall of non verbal memory

Inferno temporal cortex- conscious recall of information

Pick Disorder -also known as *fronto temporal amnesia*, is caused by atrophy of the fronto temporal lobe

- In recent studies, patients with bilateral MTL damage were found to be impaired **at remembering visual information**
- Retention of novel visual objects and patterns(bilateral MTL damage)

Affect/personality

Temporal lobe epilepsy associated with personality change

1. Emphasis on trivia and petty details of daily life
2. Egocentrism, preservation (stickiness in detailing personal problems)
3. Suspicious, aggressiveness
4. Hypergraphia
5. Hyper religiosity
6. Pedantic speech(Overly formal speech)
7. Altered sexual behaviour

Language can be affected by temporal lobe damage.

- **Left temporal**
- lesions disturb recognition of words/ poor comprehension.
- Wernicke's aphasia(Receptive/fluent)
- Speaks normally or sometimes excessive(Logorrhea) but uses jargon & invented word)
- Paragrammatism(defective sentence structure)
- **Right temporal damage** can cause a loss of inhibition of talking
- **Logopenic Primary Progressive Aphasia:** Angular Gyrus
Impaired comprehension of syntax, slowed speech with normal articulation, poor naming

Kluver Bucy syndrome

- Amygdala
- Visual agnosia, Placidity, Hyper sexuality, amnesia (anterograde and retrograde)
- **Problem in consciousness:**

Temporal lobe epilepsy,

Alteration of consciousness:- Complex (loss of consciousness)

déjà vu

Jamais Vu

Confusion