

# PARIETAL LOBE SYNDROME



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

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## PARIETAL LOBE SYNDROME

Damage to parietal lobe results in three types of syndromes

- A. Syndrome associated with left parietal lobe lesion.
- B. Syndromes associated with right parietal lobe lesion.
- C. **Specific types of symptoms.**

Parietal lobe lesion patients shows the following characteristics signs and symptoms

## Symptoms of left Parietal lobe lesions

In 1924, Josef Grestmann described a patient with an unusual symptoms following left parietal stroke-

**Finger agnosia**- the patient was unable to name or indicate recognition of the fingers on either hand.

**Right-left confusion**

**Agraphia**- inability to write

**Acalculia**- inability to perform mathematical calculation.

These four symptoms collectively known as **Gerstmann syndrome**. Gerstmann and others argued that these symptoms accompanied a circumscribed lesion in the left parietal lobe, corresponding to the **angular gyrus (area 39)**

If these four symptoms occurred as a group, the patient was said to demonstrate the **Gerstmann syndrome**, and lesion could be localized in the angular gyrus.

# Gerstmann Syndrome

- Left-Right Confusion
  - Dysgraphia
  - Finger agnosia
  - Acalculia
- 
- Lesion in inferior parietal lobule – angular gyrus and subjacent white matter
  - Spatial knowledge mediated by the language has been proposed as a basic underlying deficit



# Gerstmann's syndrome

- Angular gyrus syndrome
- Usually dominant hemisphere stroke
- In order of frequency:
  - Dysgraphia
  - Dyscalculia
  - Left-right disorientation
  - Finger agnosia



On 24 Aug 1975, Mr. S. an 11 year old boy suddenly had a seizure which was characterized by twitching on the right side of the body. He was given anticonvulsant medication and was symptoms free until 16 sep 1975, when he was immediately referred to a neurologist, who diagnosed a left parietal malignant astrocytoma. Careful neuropsychological assessment revealed a number of symptoms characteristics of left parietal lesions.

**1. Symptoms of disturbed language functions**

a. **Agraphia**- he was unable to write his name.

b. **Dyslexia**- Difficulty in reading.

c. **Dysphasia**- slow speech and making error in grammar.

**2. Apraxia**- (inability to perform particular purposive actions) inability to combine blocks to form designs and had difficulty in learning a sequence of novel movements of the limbs.

**3. Dyscalculia**- Poor at mental arithmetic calculation and could not solve correctly even simple addition and subtractions.

**4. Low digit Span**- inability to master the immediate recall of only three digits, whether they were presented orally or visually.

**5. Inability to distinguish left from right** (no orientation of right and left)

## **Symptoms of right parietal lobe lesions**

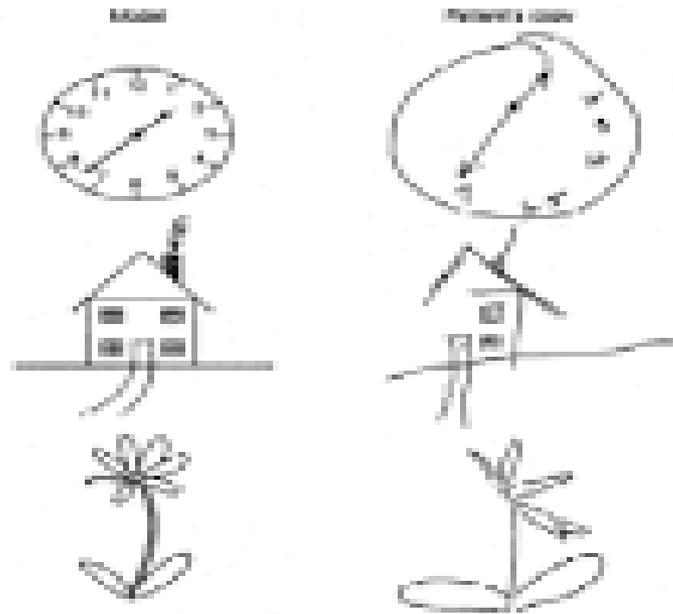
**Contra lateral neglect-** Neglect opposite side of lesion lobe  
(neglect left side)

### **1. Neglect left side of body and of the world.**

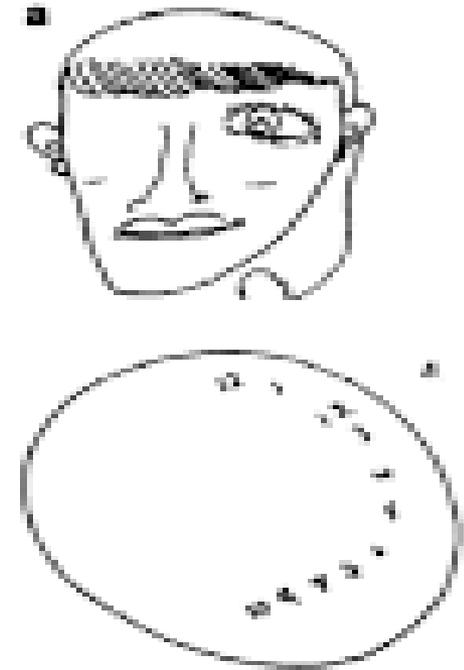
- **When asked to lift up arms, fails to lift left arm but could do so if one took arm and lift it.**
- **When asked to draw a clock face, left side is neglected.**
- **In reading compound words such as ice cream or football, only cream and ball is read.**
- **In dressing no attempt to put on the left side of clothing, a form of dressing apraxia.**
- **Shave only right side of the face.**

# Contra lateral neglect- Neglect opposite side of lesion lobe (neglect left side)

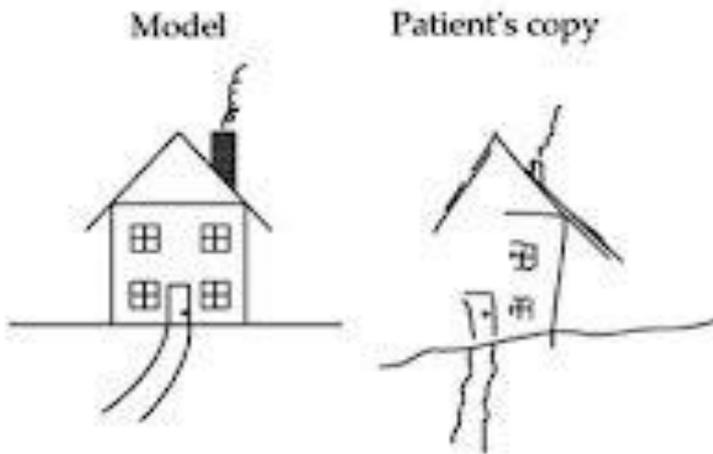
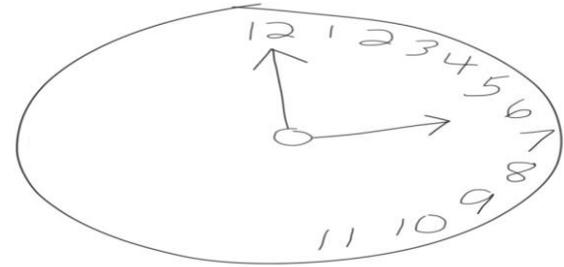
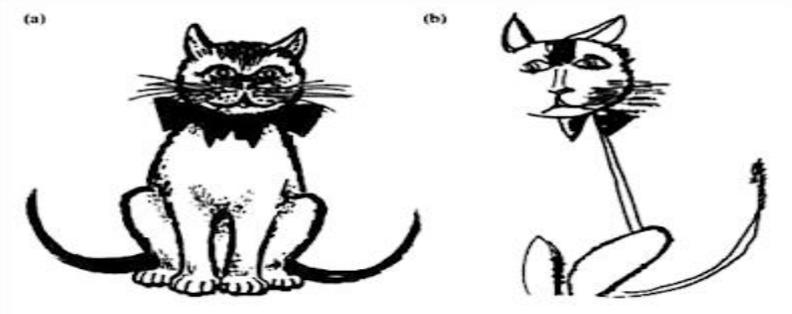
Copying:



Spontaneous drawing:



**Contra lateral neglect-** Neglect opposite side of lesion lobe (neglect left side)



2. **Constructional Apraxia-** Impairment at drawing freehand with either hand, copying drawing, or cutting out paper figures. When drawing extra strokes are added, in an effort to make the picture correct but the drawing generally lacked accurate spatial relations.

3. **Topographical disability-** inability to draw picture on basis of memory because of error in direction and spatial arrangement.

The neglect occurs due to

- i. **Defective sensation or perception**
- ii. **Defective attention or orientation**

## Balint's Syndrome

In 1909, Balint described a patient with rather peculiar visual symptoms. The patient showed no obvious signs of mental impairment, displaying no aphasia or apraxia, can recognize, use and name objects, pictures and colors normally. In spite of this, patient did have three unusual symptoms.

1. **Simultanagnosia-** (Inability to perceive the visual field as a whole) Although the patient spontaneously looked straight ahead, when an array of stimuli was placed in front of him, he directed his gaze 35 degree to 40 degree to the right and perceived only what was lying in that direction. This symptom included a component of neglect of the left visual field, but in addition there was neglect of part of the right visual field.

### Balint's Syndrome

- Clinical triad described by Balint :-
  - **Optic Ataxia** – visually difficult to reach for objects; may see, recognize object, but movement is usually misdirected
  - **Psychic paralysis of gaze** – difficulty in visual scanning; not able to maintain fixation on an object - eyes will begin to wander to another object
  - **Simultanagnosia** - (can only "see" one object at a time) not able to perceive more than one object at a time
- Bilateral occipital-parietal lesions

1. **Oculomotor apraxia-** (difficulty in fixing the eye) In this, once the patient's attention was directed toward an object, no other stimulus was noticed. Balint concluded that the patient's field of attention was limited to one object at a time, a disorder that make reading very difficult since each letter was perceived seperately.
3. **Optic Ataxia-** (inability to move the head to a specific object by using vision) in this the patient has difficulty in reaching target object under visual guidance.

Other specific symptoms

**Asterognosis- unaware that anything is wrong.**

Inability to identify tactile object (touch) also called tactile agnosia- due to lesion in right posterior parietal regions.

**Anosagnosia- Also called Babinski syndrome- Inability to accept ones own defect.**

Balint's syndrome does not seem to occur with unilateral lesions, although it has been reported by others in patients with bilateral lesions. It thus can be considered quite rare. Nevertheless, **the deficits in directing gaze and reaching are important in understanding parietal lobe function.**

# REFERENCES

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**Google images.**

**Thank you**