

# THE MISSING LINK BETWEEN CONNECTION & MOTIVATION

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## Clinical Presentation-Case 1

### **History:**

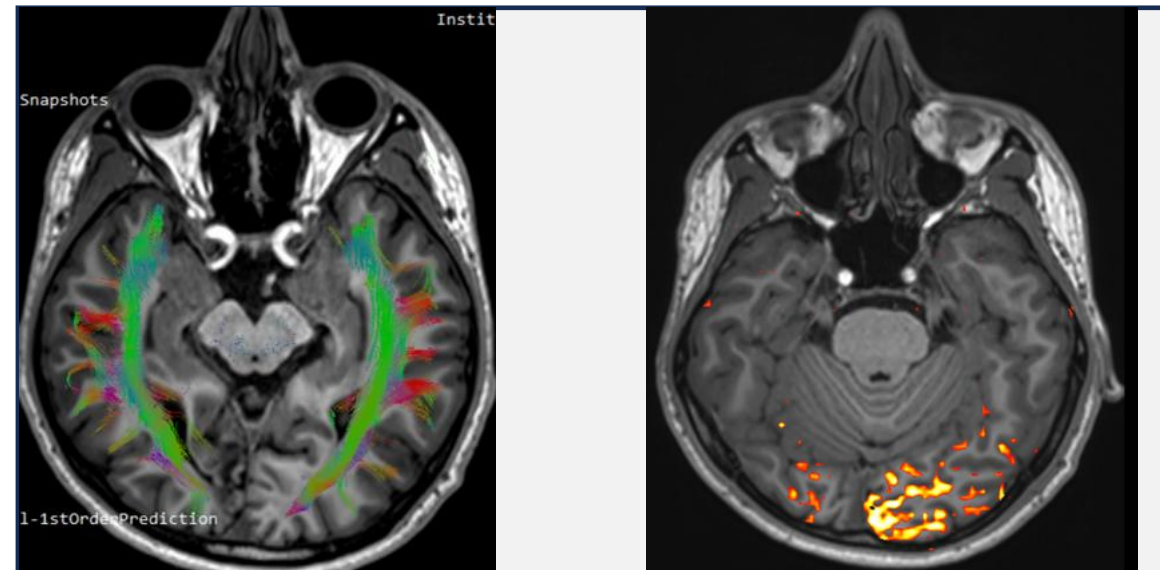
- Mr X, 18 yrs male right handed
- K/C/O-GTCS since 11 yrs of age with H/O febrile seizure at 3 yrs of age
- C/O-Inability to focus on study & difficulty to track ongoing videos without sound despite visual acuity of 6/6

### **Examination Findings:**

- General neurological examination: WNL
- Cognitive neurological examination: MOCA of 24/30 (Attention-3/6, Memory recall-2/5) with inability to identify facial emotions without prosopagnosia & visual agnosia.

## Relevant Investigation

- EEG: No epileptiform discharges
- MRI Brain: Right occipital gliosis
- fMRI: Decreased blood flow in right occipital region
- Tractography: Thinning of inferior longitudinal fasciculus (ILF) & not able to trace upto occipital cortex



## **Clinical Presentation case-2**

### **History:**

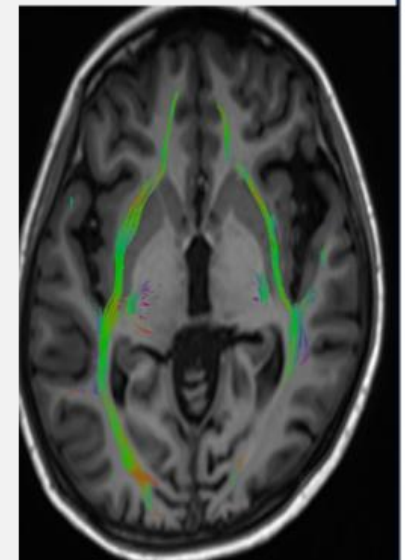
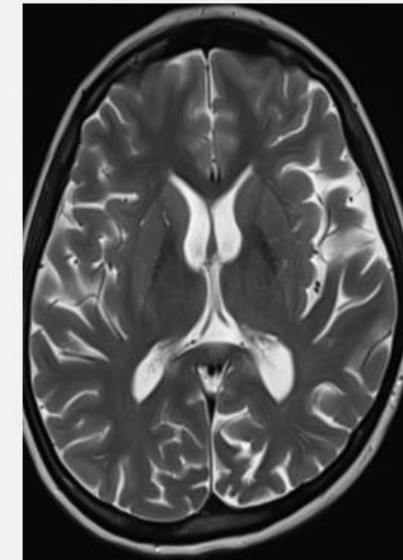
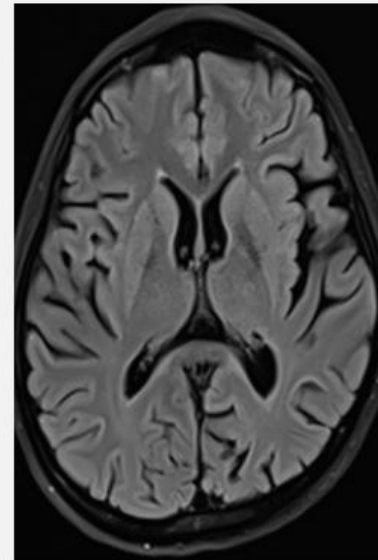
- 37 yrs old right handed female had suffered from posterior reversible encephalopathy syndrome in 2023.
- C/O- inability to drive despite being a well skilled driver previously.

### **Examination**

- General neurological examination: normal limit including normal field of vision and acuity of vision
- Cognitive neurological examination: MOCA 25/30(Attention-4/6 & memory recall -3/5).She had no visual agnosia, prosopagnosia but difficulty in perceiving visual motion.

## **INVESTIGATIONS**

- Routine blood test –WNL
- MRI Brain not showing any significant abnormality.
- DTI-MRI shows thinning of left ILF & breach in continuity of ILF towards occipital lobe.



## DISCUSSION

- ILF is related to visual processing & structurally different from optic radiation fibres & U-shaped fibres.
- ILF originate from extra- striate cortex of occipital lobe & run parallel to optic radiation fibres & a direct fast connection of visual information to anterior temporal structure & from anterior temporal structure to occipital lobe.
- Both had lesion in ILF & suffering from occipito-temporal disconnection syndrome.
- They were not able to learn novel non-verbalize visual stimuli due to lesion in ILF
- May be there is also lack of motivation possibly due to lack of neuro-modulatory effect of amygdala on extra-striate visual cortex.

## REFERENCES

- Occipito-temporal connections in the human brain [Marco Catani 1, Derek K Jones, Rosario Donato, Dominic H Ffytche] PMID: 12821517 DOI: 10.1093/brain/awg203
- Functional Anatomy of the Inferior Longitudinal Fasciculus: From Historical Reports to Current Hypotheses[Guillaume Herbet 1,2,3,\*, Ilyess Zemmoura 4,5, Hugues Duffau 1,2,3] PMCID: PMC6156142 PMID: 30283306
- The Role of Occipitotemporal Network for Speed-Reading: An fMRI Study[Dexin Sun 1,2, Zhilin Zhang 1,2,3,✉, Naoya Oishi 4, Qi Dai 3, Dinh Ha Duy Thuy 5, Nobuhito Abe 6, Jun Tachibana 7, Shintaro Funahashi 1,2, Jinglong Wu 1,2, Toshiya Murai 3, Hidenao Fukuyama 1,2,5] PMCID: PMC11365886 PMID: 38937384