The Visual cortex and fusiform facial recognition connections revealed: Non-Invasive Mapping with Diffusion tensor imaging Tractography on Prosopagnosia in Alzheimer's patients

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Prosopagnosia is a common sign in Alzheimer disease (AD), especially characterized with the loss of familiar face recognition in the earlier stage. Brain regions dedicated to human face processing include Amygdala, Fusiform Face Area (FFA), Occipital Face Area (OFA), a region of ventro-medial temporal cortex and superior temporal sulcus. Early visual analysis of facial features occurs in the visual cortex and Superior Temporal Sulcus (STS). In variant aspects like similar Face recognition is processed in the lateral fusiform gyrus, which is interconnected with temporal lobe, where specific information about name and biographical data are retrieved. The Diffusion tensor images (DTI) datasets were obtained from 25 control and 25 Alzheimer patients of both the sexes, with age group from 50 to 75 years. Study aimed to identify the neural structural connectivity analysis in failure of familiar face recognition in Alzheimer's Patients. Also, correlates its functional importance, using *"Non-Invasive Diffusion Imaging fiber Tractography".*

Results: Analysis of tracts from visual cortex to inferior temporal lobe showed decrease in number and increase in the length of the tracts in Alzheimer's patients when compared to normal (DTI). Tracts reaching fusiform are greatly varied. Variation in the number and volume of connectivity fibers between the visual cortex with fusiform gyrus are primarily identified in right hemisphere than left hemisphere.

Conclusion: As the tracts reaching the fusiform gyrus are deteriorated, it interprets in the atrophy of fusiform gyrus which leads to the absence of Familiar Face Recognition in AD patients.

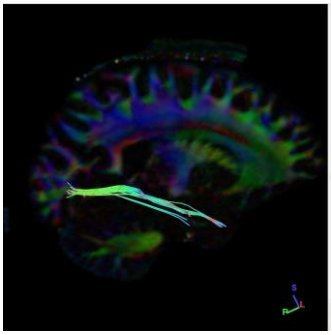


Fig-1: Facial Recognition Pathway - Control Group

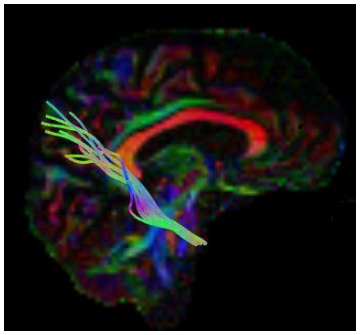


Fig-2: Facial Recognition Pathway - Alzheimer Patient's

Keywords: Fusiform Face Area (FFA), Occipital Face Area (OFA), ventero-medial temporal cortex and superior temporal sulcus.

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Biography:

Christina Vadiyala, she is a medical student in an Eminent University in the Caribbean region – Guyana, the Texila American University. She is an outstanding Junior Young Researcher in "Team NeurON" group from the same University. She is basically from India, migrated to Guyana for her Medicine study and Research activities. Her area of interest is Neuroscience and Imaging tractography. She is leading a research sub-group within the Team NeurON. She also involved in more than 15 research activities in Team NeurON, and also she has been serving as Secretary and coordinator for the same Team NeurON group in Texila America University.

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