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Stroke Versus TBI: Utilization of DTI

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Objective: Stroke versus Traumatic Brain Injury, Utility of Diffusion Tensor Imaging (DTI) in diagnosing etiology of Anosmia.

Background: Anosmia is a common sequela of Stroke & traumatic brain injury (TBI) and presents a unique diagnostic challenge. Currently, anosmia is diagnosed through smell tests in conjunction with a history and physical exam. Because this protocol relies almost exclusively on patient responses and lacks an objective measure of impairment, it may be difficult to establish anosmia for purposes of compensation. Although many physicians believe that DTI of the olfactory regions cannot be successfully performed because of their proximity to air-filled sinuses, Skorpil et al. (2011) has demonstrated DTI fiber tracking of the olfactory tracts and several studies have explored DTI of the olfactory regions as a diagnostic tool in the early stages Parkinson's disease. To our knowledge there has never been a study of the potential of DTI to confirm post-traumatic anosmia.

Methods: The patient K.P. is a 44-year-old female with pre existing history of metabolic syndrome with pre-existing history of headache and dizziness who was coincidentally punched on the right side of the face, causing her to lose consciousness. After the incident, she reported persistent headaches, dizziness, and anosmia. The anosmia had persisted for three years when she underwent DTI of the frontal lobe and olfactory bulb.

Results and Conclusions: DTI revealed encephalomalacia of the anterior frontal lobe and the adjacent olfactory bulbs consistent with post-traumatic anosmia. This case demonstrates for the first time that DTI can supplement existing protocols for the diagnosis of post-traumatic anosmia.

Biography

Ranga C Krishna is a board certified neurologist with the American Board of Psychiatry and Neurology. He's the director of stroke and neurology at the NY Presbyterian community hospital and has been in clinical practice for the last 26 years with a special interest in Stroke, Epilepsy, Traumatic Brain Injury, and Neuromuscular Diseases.

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