Diffusion tensor magnetic resonance imaging in assessment of prognostic outcome of stroke patients

Thesis

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ABSTRACT

Diffusion tensor MR imaging enable evaluation of the integrity of white matter tracts and their orientation and is used to evaluate the patterns of affection of white matter tracts following stroke. We found good association between tractography findings and patient's clinical recovery on follow up of acute cases. All the patients with disruption of white matter tracts had residual deficits on clinical follow-up, whereas the patients with displaced and preserved tracts had near complete neurological recovery.

KEY WORDS

MRI, Diffusion tensor, tractography, stroke, prognosis

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LIST OF ABBREVIATIONS

2D	Two dimensional
3D	Three dimensional
ACA	anterior cerebral arteries
ADC	Apparent diffusion coefficient
AIDS	acquired immunodeficiency syndrome
CABG	Coronary artery bypass graft
CBF	Cerebral blood flow
CBV	Cerebral blood volume
CE	Contrast enhanced
CC	corpus callosum
CNS	Central nervous system
CSF	cerebrospinal fluid
CST	Corticospinal tract
CT	Computed tomography
DEC	Directional encoded colour
DM	Diabetes mellitus
DSA	Digital subtraction angiography
DT	Diffusion tensor
DTI	Diffusion tensor imaging
DTT	Diffusion tensor tractography
DW	Diffusion weighted
DWI	Diffusion weighted imaging

EPI	Echo planner imaging
FA	Fractional anisotropy
FACT	Fiber assignment by continuous tracking
FLAIR	Fluid Attenuation Inversion Recovery
FOV	Field of view
FT	Fiber Tractography
GRE	gradient recalled echo
HARDI	High angular resolution diffusion imaging
HIV	Human Immunodeficiency Virus
HTN	Hypertension
icp	inferior cerebellar peduncle
ICH	intracerebral hemorrhage
IFOF	inferior frontooccipital fasciculus
ILF	inferior longitudinal fasciculus
MCA	Middle cerebral artery
mcp	middle cerebellar peduncle
MD	Mean diffusivity
MIP	Maximum intensity projection
ml	medial lemniscus
MR	magnetic resonance
MRA	Magnetic resonance angiography
MRI	Magnetic resonance imaging
MS	Multiple sclerosis
MTT	Mean transit time

NIHSS	National Institutes of Health Stroke Scale
PCA	Posterior cerebral artery
PI	perfusion imaging
PLIC	posterior limb of internal capsule
PROPELLER	periodically rotated overlapping parallel lines with enhanced reconstruction
ROI	Regions of interest
SAH	Subarachnoid hemorrhage
scp	superior cerebellar peduncle
SD	Standard deviation
SNAILS	Self-navigated interleaved spiral
SNR	Signal to noise ratio
STEAM	Single-shot stimulated-echo acquisition mode
SWI	susceptibility-weighted imaging
TIA	Transient ischemic attack
TOAST	trial of ORG 10172 in acute stroke treatment
TOF	time-of-flight
TTP	time to peak
TE	Time of echo
TR	Time of repetition
WD	Wallerian degeneration
WM	White matter

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