Role of diffusion tensor imaging (DTI) in developmental brain anomalies in pediatric age group of Egyptian patients.

Thesis

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By

Dina Haroun Fawzy Haroun,MBBCh

Faculty of medicine

Cairo University

Supervised by

Ass.Prof.Hadeel Mohamed Seif El Din ,MD

Assistant Professor of Diagnostic and Interventional radiology

Faculty of medicine

Cairo University

Dr.Rania Zakaria Hassan Abo El Ezz,MD

Lecturer of Diagnostic and Interventional radiology

Faculty of medicine

Cairo University

Faculty of medicine

Cairo University

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Keywords:- FT,DTI,MRI, Front,Para,Occ

Abstract

This study obtained additional or unique findings in CNS developmental disease by using DTI-FT in comparison with those obtained by using conventional MR imaging.MR tractography can visualize the white matter tracts as being either disrupted, displaced or reduced caliber and offers a potential tool for clinical-imaging correlation of the involved white matter tracts and also the functions of white matter tracts can be studied accordingly .

Finally The recommendations of our study to add the sequence of DTI to the routine conventional MRI sequence to serve as complementary sequence;specially in pediatric patients with congenital or developmental disorders to detect aberrant tracts and can help to monitor prognosis in case of white matter abnormalities and treatment effect .

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List of Abbreviations

3D	3-Dimensional
ADC	Apparent Diffusion Coefficient
Atr,cpt,str	Anterior thalamic radiation ,cortico-pontine tracts ,superior thalamic radiation
CC	Corpus Callosum
CNS	Central Nervous System
CS	Carnegie stage
Cst	Corticospinal Tract
DTI	Diffusion Tensor Imaging
DTTI	Diffusion Tensor Tractography Imaging
DW	Diffusion Weighted
EPI	Echo Planar Imaging
Front,Para,Occ	Frontal ,parietal and occipital
FA	Fractional Anisotropy
FLAIR	Fluid Attenuation Inversion Recovery
FOV	Field of view
FT	Fiber tractography
LGN	Lateral geniculate nucleus
ML	Medial lemniscus
MRA	Magnetic resonance angiography
MRS	MR spectroscopy imaging
NT	Neural tube
NTD	Neural tube defect
ROI	Regions of Interest
SCP,MCP,ICP	superior cerebellar peduncle
SE	Spin echo
SFO,IFO	Superior fronto-occipital ,inferior fronto-occipital
SLF,ILF	Superior longitudinal fasciculus , inferior longitudinal fasciculus

SNR	Signal-To-Noise Ratio
T2WI	T2 Weighted Image
TBSS	tract-based spatial statistics
TH	Thalamus
WM	White Matter

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Part I

Review of literature

Chapter One

Introduction and Aim of work