ROLE OF DTI METRICS IN DIFFERENTIATION OF CYSTIC INTRACRANIAL MASS LESIONS

ABSTRACT

Back ground & purpose:

Conventional MR does not always differentiate various cystic lesions of brain. My purpose was to explore the utility of DTI in characterization & differentiation of intra cranial cystic mass lesions.

Materials and Methods:

DTI was done with a clinical 1.5 Tesla system in 62 patients presenting with intra cranial cystic lesions. Parameter maps of the DTI metrics MD, FA, GA, RA, Geometric tensors (CL,CP,CS) were calculated & quantified using regions of interest. Cystic lesions were grouped based on etiology and management. Statistical analysis was performed to test the significance of difference in DTI metrics in differentiation of various groups of cystic lesions of brain.

Results:

Epidermoid cysts showed highest FA, RA, Cl & Cp due to the preferential diffusion of water through the well structured orientation of keratin filaments & flakes within it. Abscesses showed lowest MD. Arachanoid cyst, giant cistern magna, choroid fissure cyst, choroid plexus cyst, ependymal & neuroglial cysts showed higher MD & lower FA, implicating no preferential directional diffusivity. Neurocysticercosis showed higher FA, next to epidermoid. Tumorous & post operative cysts also showed high MD.

Conclusion:

DTI does prove useful in characterization and differentiation of intracranial cystic mass lesions.

Abbreviations: DTI =Diffusion tensor imaging, FA=Fractional anisotrophy, MD= Mean diffusivity, RA=Regional anisotrophy, GA= Geodesic anisometry, Cl= linear tensor, Cp=planar tensor, Cs=spherical tensor.