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Role of DW-MRI in monitoring therapy in head and neck squamous cell carcinoma

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Aim: To evaluate the role of DW-MRI and ADC value in monitoring therapy of head and neck squamous cell carcinoma.

Patients & Methods: 40 patients with head and neck squamous cell carcinoma, age ranged from 40 to 68 years, 30 patients were male while 10 were female. Pre-treatment examinations included contrast-enhanced CT, endoscopic biopsy and Conventional MRI. Pre-treatment includes 1st DW-MRI imaging within 10 days before treatment (ADC1), 2nd imaging 3 weeks after start of treatment (ADC2) and 3rd after 6 to 8 weeks from end of treatment.

Results: Significant changes between mean ADC value of 40 primary lesions and 22 metastatic LNs, noted at ADC1 and ADC2, indicating high ability of DW-MRI to detect early changes occurs after beginning of treatment. Relationship between pretreatment ADC value and prediction of early treatment response revealed 76.9% sensitivity, 71.4% specificity, 83.3% PPV and 62.5% NPV. ROC curve for fractional ADC value change (ADC2-ADC1) from 40 lesions primary tumors provided best discriminatory accuracy (AUC=0.85±0.09) in distinguishing between responders and non-responders with 92.3% sensitivity, 85.7% specificity, 92.9% PPV and 85.7% NPV.

Conclusion: Intra treatment ADC value can be used as a marker for prediction and monitoring therapy response for HNSCC.

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