



COMMENT ON “HEAD AND NECK SQUAMOCELLULAR CARCINOMA: ADDED ROLE OF DIFFUSION WEIGHTED IMAGING”, WRITTEN BY PICCOLI ET AL WCRJ 2014; 1: E285.

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Dear Editor,

We read with great interest the review, “Head and neck squamocellular carcinoma: added role of diffusion weighted imaging”, written by Piccoli et Al al¹.

The review analyses the role of DWI in the management of head and neck squamocellular carcinoma; it represents a very interesting topic, with many articles in literature^{2,3}.

MRI plays an important role in the staging of cancer diseases, due to its excellent contrast resolution and high diagnostic capability^{4,5}; diffusion sequences have been routinely introduced in MRI protocols⁶, and are currently used for several oncological and non-oncological applications^{7,8}. Diffusion MRI plays an important role in the management of oncological diseases: as previously reported in literature, it enables improving detection of lesions and possibility of tissue characterization⁹. In addition, it provides information on cellularity and response to treatment, with several encouraging studies about this topic having been published.

However, there are several crucial points that need to be considered, especially in the management of head and neck squamocellular carcinoma. First of all, ADC values could show a non-trascurable overlap among benign and malignant lesions, especially in the evaluation of nodes (N staging); consequently, quantitative approach is still limited.

Another critical point – for diffusion MRI – is the repeatability and reproducibility of ADC measurements. In a recent work by Hoang et Al, ADC repeatability was assessed in two baseline exami-

nations and in a third intratreatment MRI evaluation³. Hoang et al found a nodal mean baseline Δ ADC of 8% ($\pm 7\%$), and it was statistically ($p = 0.01$) different in the comparison with intratreatment changes of 32% ($\pm 31\%$)²; in addition, Authors reported a “calculated repeatability coefficient for baseline nodal ADC of 15%”. In the evaluation of oncological response, radiologists and clinicians need to consider the intrinsic variability in baseline evaluation².

It is also important to consider IntraVoxel Incoherent Motion (IVIM) analysis in the evaluation of response to treatment. As previously reported by Sakamoto et Al, IVIM analysis increases diagnostic accuracy in predicting malignancy of head and neck tumor¹⁰. True diffusion coefficient, perfusion fraction and D and D* should be added to ADC analysis in order to obtain a better diagnostic accuracy.

Different quantitative evaluations have been used in literature. In a study by Hauser et Al, IVIM-DWI has been performed to evaluate prediction of treatment response in head and neck carcinomas. For nodal disease, Authors did not find a statistical difference between patients with nodal failure and patients with disease control ($p = 0.30$); perfusion fraction was significantly higher in the group with locoregional failure¹¹. Further studies are needed in order to better clarify the importance of quantitative analysis in characterization and prediction of response to treatment.

CONFLICT OF INTERESTS:

The Authors declare that they have no conflict of interests.



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