Title of thesis: The role of Diffusion- MRI in characterization of head and neck masses

Supervisors:

Prof.Dr. Mohamed Abdel- Latif Mahmoud

Prof Dr. Nader Shabaan Zaky

Dr. Engy Shawky El-kayal

Department : Diagnostic Radiolody   approval

Abstract

Abstract Background: Diagnosis of head and neck lesions is difficult due to the complicated anatomic structure and different histological components of the many tissues that the neck contains,.Diffusion weighted imaging (DWI) is now part of most oncologic magnetic resonance imaging (MRI) protocols and is commonly used in routine examinations for tumor characterization and staging and for detection of residual disease after chemo-radiotherapy

Methods : fifty patients, 32 males (64%) and 18 females (36%) .All cases had been subjected to : Clinical assessment sheet by the referral doctor.Revision of the radiological investigations previously done for the patients and an MRI study with routine axial T 1 and T 2 weighted images and in addition a protocol of Diffusion weighted images was applied in three orthogonal directions and ADC map was generated.

Results: the mean ADC value of benign masses was higher than that of malignant masses .These differences in ADC values may be explained by the differences in the histopathological characteristics of benign and malignant tumors. The mean ADC for that of benign lesions was 1.99

x10-3 and the mean ADC for that of malignant lesions was 0.99 x 10-3 with significant difference between values of ADC for benign and malignant lesions . We used a ROC curve to determine a cutoff point of 1.45 x10-3 or less with 100 %sensitivity and 90.7 % specificity the area under the curve is about 0.982.

Conclusion: The use of diffusion weighted image and ADC may be used to help in characterization of head and neck lesions .DWI has a high sensitivity and specificity , and maybe a reliable, non-invasive imaging modality for the differentiation of head and neck masses and their nature