The role of diffusion weighted MRI study and its quantitative parameter, apparent diffusion coefficient value, to differentiate malignant from benign thyroid nodules

Thesis

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Abstract

Abstract Background: Thyroid nodule evaluation is usually done using a fine needle aspiration cytology/biopsy. The aim of this study was to evaluate the role of diffusion weighted imaging to differentiate benign from malignant thyroid nodules.

Methods : fifty five patients, 3 males (5.5%) and 52 females (49.5%) (17–66 years, mean age 44.4 years) with thyroid nodules were included in the study. Routine MRI of neck and diffusion-weighted MR imaging was performed using b-values 1000. Apparent diffusion coefficient (ADC) values were done for every case. Histopathological results of the thyroidectomy samples were obtained. Comparison of apparent diffusion coefficient values of thyroid nodules with the histopathology was done.

Results: The pathology results showed that there were 44 (80%)and 11 (20%) benign and malignant thyroid nodules respectively. The mean maximum diameter of benign and malignant thyroid nodules were 3.5 ±1.2cm and 2.66± 0.8cm respectively, The mean ADC for being and malignant nodules were 2.13 ±0.4 x10-3 and 1.141 ±0.16x 10-3 respectively. ADC values for benign and malignant thyroid nodules which were significant ($p< 0.001$). Higher

Conclusion: Differentiation of thyroid nodules whether benign or malignant can be done using the diffusion-weighted MR technique.

Key words: thyroid gland , thyroid nodules , diffusion weighted imaging ,ADC ,b- value