

Diagnostic Efficiency of Single Source Dual Energy CT in differentiating Adrenal Adenoma from Adrenal Metastasis

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ABSTRACT

Background: The distinction between incidental adrenal lesions is still difficult in diagnostic imaging whereas Dual energy CT has not been thoroughly tested for its ability to diagnose adrenal lesions. This study utilizes dual energy CT to identify between the two most prevalent adrenal neoplasms, adrenal metastasis and adrenal adenomas. **Objective:** To evaluate the efficacy of non-enhanced single-source dual-energy computed tomography (ssDECT) in differentiating metastases from adenomas in adrenal glands. **Materials and methods :** This is a retrospective study conducted in the department of radio diagnosis of Mysore medical college and research institute after receiving the approval from our institutional ethical committee. A total of fifty six patients (32 men, 24 women) with 31 adrenal metastases (AMs) and 32 adrenal adenomas (AAs) underwent a plain dual-energy CT imaging from March 2021 to October 2022 were included. The CT number from the virtual monochromatic spectral (VMS) image sets were measured for the AMs and AAs. The difference of CT numbers between AMs and AAs was statistically compared by P value and the box plot curve. **Results:** The CT number (median, range) of metastases (50.47, 29.93 HU at 40 keV and 29.00, 9.36 HU at 140 keV) was significantly higher than that of adenomas (0.76, 33.04 to 13.73, 18.96 HU) at each energy level from 40 to 140 keV (P < .05). **Conclusion:** Using CT numbers obtained from virtual monochromatic images of single source dual energy CT can be used to differentiate adenomas from adrenal metastasis. The Median CT number of metastases was higher than that of adenomas at 40 Kev and 140 Kev. The median CT number of metastases decreased with increase in incident photon energy in Kev and median CT number of adenomas increased with increase in incident photon energy in Kev.

Keywords- Virtual monochromatic spectral (VMS) image, Dual energy computed tomography, adrenal lesions, differential diagnosis.