Importance of Metastatic Lesions Density for CT Assessment of Efficiency of Target Therapy Renal Cell Cancer

Introduction and Objectives: The aim of study was to determine the importance of metastatic RCC lesion density measurement on CT data for assessment and predicting efficiency of VEGF-targeted therapy.
Materials and Methods: CT data of 26 patients with metastatic RCC, treating by VEGF-targeted therapy during the period from 2007 to 2011 year. Seventeen of 26 patients is continuing therapy now. In all cases disseminated metastasis with involvement of 2-4 organs was determined. Assessment of target lesion's change was performed using CT data of 52 target lesions with measurement of change of lesion size (RECIST) and density (Hounsfield units - HU). In 12 lesions out of 52 (23.08%) tendency to size increase after 6-12 month (8.29 month) of therapy was seen (these patients were included in Gr 1), while in remaining 40 cases (76.92%) (Gr 2) stabilization or decrease of lesion size was noted at 12 or more month.
Results: In Gr 1 and 2 there was no significant difference in the mean lesion size (30.62 and 35.84 mm, respectively). The mean lesion density in Gr 1 and 2 was 79.25 HU and 93.37 HU, respectively (p=0.44). Following 4-months therapy, the mean lesion size in Gr 1 and 2 decreased (26.57 and 27.51 mm, respectively), which was considered as positive therapy effect. Although, the mean lesion density in Gr 1 did not change (80.26 HU), correspondent figure in Gr 2 significantly decreased by 55% and was 55.56 HU (p=0.01). Consequently, in Gr 1 gradual increase of lesions size was noted, while in Gr 2 the stabilization of lesion size was seen. Following 12-month therapy, significant difference in the mean size of lesions in Gr 1 and 2 was found (55.83 and 28.28 mm, respectively) (p=0.0057). The difference in lesion density between groups again reached statistical difference after 10-month of treatment (93.05 HU in Gr 1 and 58.31 HU in Gr 2) (p=0.0058).
Conclusions: Determination of lesion's density at 4 month after starting TT can predict progression of target lesion during 1 year of therapy. Change of non-target lesions density can be considered criteria for evaluation of TT efficiency.