

**Comparison of adrenal protocol CT and  $^{18}\text{F}$ FDG-PET/CT: accuracy for adenoma characterization**

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**PURPOSE:** To compare adrenal protocol CT and  $^{18}\text{F}$ FDG-PET/CT for accuracy for adenoma characterization.

**MATERIALS AND METHODS:** This retrospective study was approved by IRB and informed consent was waived. Between June 2006 and December 2010, 75 oncologic patients with 75 solid adrenal masses underwent both adrenal protocol CT and  $^{18}\text{F}$ FDG-PET/CT. For adrenal protocol CT, adenoma was diagnosed if a mass had an absolute percentage loss of enhancement (PLE) of more than 60% or relative PLE of more than 40%. Absolute and relative PLE values were calculated by  $[(\text{CT}_\text{E} - \text{CT}_\text{D}) \times 100 / (\text{CT}_\text{E} - \text{CT}_\text{U})]$  or by  $[(\text{CT}_\text{E} - \text{CT}_\text{D}) \times 100 / \text{CT}_\text{E}]$ ;  $\text{CT}_\text{U}$ ,  $\text{CT}_\text{E}$ , and  $\text{CT}_\text{D}$  were attenuation values of an adrenal mass at unenhanced, early, and delayed enhanced CT. For  $^{18}\text{F}$ FDG-PET/CT, adenoma was diagnosed if a mass was iso- or hypermetabolic compared to liver. Sensitivity, specificity, positive predictive value, and negative predictive value for adenoma were compared between adrenal protocol CT and  $^{18}\text{F}$ FDG-PET/CT. The sensitivity for adenoma of adrenal protocol CT and  $^{18}\text{F}$ FDG-PET/CT was obtained with a standard reference of pathologic diagnosis or size stability on follow-up examination. McNemar's test was used for comparison of adrenal protocol CT and  $^{18}\text{F}$ FDG-PET/CT in terms of accuracy for adenoma.

**RESULTS:** Of 75 adrenal masses, 54 were histologically or clinically confirmed as adenoma. Sensitivity, specificity, positive predictive value, and negative predictive value for adenoma using adrenal protocol CT and  $^{18}\text{F}$ FDG-PET/CT were 87% (47/54) and 81% (44/54), 90% (19/21) and 81% (17/21), 96% (47/49) and 92% (44/48), and 73% (19/26) and 63% (17/27), respectively. Therefore, overall accuracies for adenoma using adrenal protocol CT and  $^{18}\text{F}$ FDG-PET/CT were 88% (66/75) and 81% (61/75), respectively. However, there was no significant difference between adrenal protocol CT and  $^{18}\text{F}$ FDG-PET/CT in terms of accuracy for adenoma ( $p = 1.00$ ).

**CONCLUSION:**  $^{18}\text{F}$ FDG-PET/CT may miss a substantial number of adenomas that are correctly diagnosed by adrenal protocol CT although there is no significant difference between these two modalities in terms of accuracy for adenoma.