

AB041. PS02.05: Predictive value of ¹⁸F-DG-PET/CT on preoperative management of thymic tumours

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Background: Exiguous data exist on the usefulness of FDG-PET/CT in the pre-operative staging process of thymic epithelial tumours. Aim of this study is to investigate the role of nuclear imaging on predicting their malignancy and invasiveness.

Methods: Retrospective, single-centre analysis of 49 patients operated from January 2010 to December 2016. The FDG-PET/CT parameters evaluated for our analysis were: tumour SUVmax (T); tumour SUVmax/tumour size (T/d); tumour SUVmax/volume (T/vol); tumour to spleen (T/S), tumour to liver (T/L), tumour to blood pool (T/BP) SUVmax ratio. WHO-histological types were grouped in: low-risk (A, AB, B1) *vs.* high-risk (B2, B3, carcinoma) tumours or thymomas *vs.* carcinomas. Masaoka stage were considered as low (I, II) and high (III, IV). Student's *t*-test for paired data, Spearman's rank correlation index and ROC curve after logistic regression were performed.

Results: There were 27 males and 22 females, mean age

61 years (range, 29–83). WHO histology: 5 (10.20%) A, 16 (32.65%) AB, 4 (8.16%) B1, 12 (24.45%) B2, 4 (8.16%) B3, 8 (16.33%) carcinomas. Masaoka stage: 25 (51.02%) I, 10 (20.41%) II, 6 (12.24%) III, 8 (16.33%) IV. There were no statistically significant differences in tumour size and volume neither between low-risk and high-risk tumours nor between thymomas and carcinomas. T (r: 0.59; P<0.0001), T/d (r: 0.49; P=0.0003), T/S (r: 0.50; P=0.0009), T/L (r: 0.48; P=0.001), T/BP (r: 0.45; P=0.003) significantly correlated with histology. Similarly, T (r: 0.5; P=0.0002), T/d (r: 0.3; P=0.02), T/S (r: 0.3; P=0.02), T/L (r: 0.3; P=0.02), T/BP (r: 0.3; P=0.01) significantly correlated with stage. No correlation was observed between T/vol and histology nor stage. According to univariate logistic regression model, T and T/d resulted as predictive factors in distinguishing low-risk from high-risk tumours (P=0.02, area under ROC-curve: 0.763 and P=0.008, area under ROC-curve: 0.767, respectively). All the parameters but T/vol were predictive to define thymic carcinomas from thymomas; in particular, the most effective was T (P=0.001, area under ROC-curve: 0.939). T, T/S, T/L, T/BP were all found to be useful to distinguish low from high stages, but T and T/L resulted as the most significant (P=0.01, area under ROC-curve: 0.784 and P=0.02, area under ROC-curve: 0.736, respectively).

Conclusions: FDG-PET/CT may be helpful to assess the grade of malignancy and to distinguish low from high stages.

Keywords: FDG-PET/CT; thymic epithelial tumours; SUVmax

doi: 10.21037/med.2017.AB041

Cite this abstract as: Tassi V, Ceccarelli S, Capozzi R, Liparulo V, Daddi N, Gili A, Messina S, Sivoletta S, Puma F. Predictive value of ¹⁸F-DG-PET/CT on preoperative management of thymic tumours. *Mediastinum* 2017;1:AB041. doi: 10.21037/med.2017.AB041