Abstract: P305

Value of aortic TBR measured on FDG-PET for the prediction of atherothrombotic events in a cohort of patients with overt coronary and carotid atherosclerotic disease

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Introduction. In patients imaged for oncological indications, high vascular FDG uptake in the ascending aortic on FDG-PET was associated with an increased rate of cardiovascular events during follow-up. Whether the results observed in patients imaged with FDG-PET for oncological indications hold true in patients with overt atherothrombotic disease remains elusive.

Purpose. The aim of this study was to evaluate the value of aortic TBR measured on FDG-PET in patients with overt coronary and carotid artery disease to predict atherothrombotic events.

Methods. A total of 190 patients with NSTEMI (n = 36), stable CAD (n = 26) or symptomatic carotid stenosis (n = 128) evaluated with FDG-PET were identified among different clinical studies which took place in our institution. All patients were imaged with the same PET-CT system 90 minutes after the injection of 4 MBq/ kg of FDG. Max SUV of the vascular wall and mean SUV of blood were measured on PET axial slices in 8 regions of interest (ROI) placed on the axial ascending thoracic aorta and 10 ROI in the superior vena cava, respectively. Mean aortic TBR was calculated in each patient as the ratio between the average of vascular max SUV and blood mean SUV. Patients with a follow-up of less than one month were excluded. Atherothrombotic events were defined as cardiac death or the apparition of new myocardial, cerebral or limb ischemia or necrosis.

Results. Mean age of patients was 67 ±14.4 years; 70 % were male. Following FDG-PET, patients were treated by anti-platelet drugs and statins. After a mean follow-up of 3.5 years, atherothrombotic events occured in 27 % of patient. The rate of atherothrombotic events increased in parallel with aortic TBR: tertile 1 (TBR: 1.22 – 1.57): 20.6 %; tertile 2 (TBR: 1.58 – 1.74): 27 %; tertile 3 (TBR: 1.75 – 2.31): 32.8 %. Aortic TBR was significantly higher in patients who developed a cardiovascular event vs. remained asymptomatic during follow-up (1.77 ± 0.20 vs. 1.65 ± 0.21; p = 0.005), whereas no difference in aortic TBR was observed in patients who developed neurovascular events vs. asymptomatic patients (1.67 ±0.18 vs. 1.65 ±0.21; p = 0.86).

Conclusions.In patients with overt coronary or carotid artery disease, high aortic TBR was associated with an increased risk of cardiovascular but not cerebrovascular events during follow-up.