Abstract: 196

Comparison of two preparation strategies for 18F-FDG myocardial uptake suppression in patients with suspected endocarditis.

Authors:
S Aguade-Bruix¹, JS Blanco Cano¹, MN Pizzi¹, MT Saicedo Pujantell¹, A Roque Perez¹, C Espinet Coll¹, J Castell-Conesa¹, ¹Hospital Vall d'Hebron - Barcelona - Spain,

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18F-FDG-PET/CTA has high sensitivity in detecting infection, with increasing relevance in the diagnosis of prosthetic valve endocarditis (PVE). For correct cardiac assessment it’s necessary to obtain the minimal myocardial FDG uptake (myocardial suppression), which can be achieved with prolonged fasting with additional Heparin IV and/or a high-fat/low-carbohydrate diet (HFLCD).

OBJECTIVE
To evaluate the efficacy of myocardial suppression by using Fasting+Heparin vs Fasting+Heparin+HFLCD. To assess a possible correlation between several biochemical variables (cholesterol, triglycerides, LDL) and the degree of suppression achieved.

METHODS
We analyzed 63 patients who underwent a PET/CTA due to suspected PVE (52 prosthetic valves, 11 valved tubes). All patients followed a 18 hours fast and IV heparin protocol (50 IU/Kg) 15 minutes before FDG injection. 41 of them also followed a HFLCD before the heparin protocol. The degree of myocardial suppression was assessed qualitatively (5-degree visual scale) and semi-quantitatively by measuring left myocardial FDG uptake (SUVmeanH). The reference uptake was measured at the liver (SUVmeanL). Adequate suppression was achieved when SUVratio Heart/Liver (SUVratioH/L) was =1.

RESULTS
The visual assessment showed adequate myocardial suppression in 45 patients (71%), 13/22 with Heparin (59%) and 32/41 with Heparin+ HFLCD (78%).

There are significant differences in the myocardial SUVmeanH values (p=0.036) and SUVratioH/L (p=0.03) between both groups. In HFLCD group the SUVmeanH was 1.91±0.88 and SUVratioH/L 0.84±0.37. In only heparin group the SUVmeanH was 2.48±1.21 and SUVratioH/L 1.1±0.59. Patients with adequate visual suppression showed a SUVratioH/L=1 in 44/45, while 15/18 patients without suppression had SUVratioH/L>1. There was good correlation (r=0.8) between SUVratioH/L and visual assessment.

No correlation was found between the clinical variables assessed and the degree of suppression. However patients with low FDG uptake showed higher cholesterol levels (155.5±47 vs 145.2±50 mg/dL) and triglycerides (161.7±179.7 vs 130.2±60.2 mg/dL) compared with not suppressed.

CONCLUSION
A 78% of patients with Fasting+Heparin+HFLCD achieved good suppression while only 59% of Fasting+Heparin. There was good correlation between qualitative and semi-quantitative assessment.