Abstract: P355

Coronary flow reserve estimated by 82-rubidium positron emission tomography predicts survival in long-term heart transplant recipients

Authors:
L Nelson¹, TE Christensen¹, P Hasbak¹, F Gustafsson¹, ¹Rigshospitalet - Copenhagen University Hospital - Copenhagen - Denmark,

Topic(s):
Heart Transplantation

Citation:

Funding Acknowledgements:
The Danish Heart Foundation, The Research Fund of Rigshospitalet

Background: Cardiac allograft vasculopathy (CAV) is a leading cause of mortality in heart transplant (HTx) recipients and non-invasive methods to assess and risk stratify patients are highly desirable. Coronary flow reserve (CFR) estimated by 82-rubidium positron emission tomography (82-Rb PET) is affected by both epicardial and microvascular disease and might thus be a reliable tool. This study aimed to investigate the predictive value of CFR after HTx.

Patients and methods: This is a single-centre retrospective study of consecutive HTx recipients receiving 82-Rb PET at our hospital, Denmark, between April 2013 and July 2017. In total 50 patients were eligible for inclusion based on available CFR measurement. 82-Rb PET was performed as part of annual CAV surveillance post HTx in patients not suitable for invasive evaluation. As a CFR value of 2.0 or greater is widely accepted as normal in clinical practice patients were grouped according to CFR: (i) high-CFR group: CFR > 2 (n=25 (50%)) versus (ii) low-CFR group: CFR = 2 (n=25 (50%)). Presence of CAV at the time of 82-Rb PET was determined by coronary angiography or intravascular ultrasound (IVUS).

Results: Median (IQR) age at time of 82-Rb PET was 57 years (43-68) and 68% were male. There was no significant difference among groups (p=0.31 and p=0.23, respectively). Median time from HTx to 82-Rb PET was 121 months (81-194) with no difference between groups (p=0.15). Median follow-up time from 82-Rb PET was 29 months (20-40) in the high-CFR group and 36 months (25-48) in the low-CFR group (p= 0.26). 12 (24%) patients died of all-cause mortality during follow-up. In the high-CFR group median CFR was 2.43 (2.26-2.81) and in the low-CFR group median CFR was 1.64 (1.36-1.88). In 28 patients (58%) CAV was present at time of 82-Rb PET with no significant difference among groups (p=0.13). Presence of CAV was determined by IVUS (maximal intimal thickness (MIT) = 0.5 mm) in 11 (39%) patients and by coronary angiography in 17 (61%) patients. In 1 (2%) patient CAV was diagnosed during follow-up and in 1 (2%) patient a percutaneous coronary intervention (PCI) was performed during follow-up. Survival function stratified by CFR group was estimated by Kaplan Meier (figure 1) and there was significant difference between the high-CFR group and the low-CFR group (log-rank test p=0.03).

Conclusion: CFR obtained by 82-Rb PET predicts survival in selected long-term HTx patients and holds promise as a non-invasive method for CAV surveillance and risk-stratification after HTx.
Abstract: P355
Coronary flow reserve estimated by 82-rubidium positron emission tomography predicts survival in long-term heart transplant recipients.

Authors: L Nelson1, TE Christensen1, P Hasbak1, F Gustafsson1
1Rigshospitalet - Copenhagen University Hospital - Copenhagen - Denmark,

Topic(s): Heart Transplantation

Citation:

Background: Cardiac allograft vasculopathy (CAV) is a leading cause of mortality in heart transplant (HTx) recipients and non-invasive methods to assess and risk stratify patients are highly desirable. Coronary flow reserve (CFR) estimated by 82-rubidium positron emission tomography (82-Rb PET) is affected by both epicardial and microvascular disease and might thus be a reliable tool. This study aimed to investigate the predictive value of CFR after HTx.

Patients and methods: This is a single-centre retrospective study of consecutive HTx recipients receiving 82-Rb PET at our hospital, Denmark, between April 2013 and July 2017. In total 50 patients were eligible for inclusion based on available CFR measurement. 82-Rb PET was performed as part of annual CAV surveillance post HTx in patients not suitable for invasive evaluation. As a CFR value of 2.0 or greater is widely accepted as normal in clinical practice patients were grouped according to CFR: (i) high-CFR group: CFR > 2 (n=25 (50%)) versus (ii) low-CFR group: CFR = 2 (n=25 (50%)). Presence of CAV at the time of 82-Rb PET was determined by coronary angiography or intravascular ultrasound (IVUS).

Results: Median (IQR) age at time of 82-Rb PET was 57 years (43-68) and 68% were male. There was no significant difference among groups (p=0.31 and p=0.23, respectively). Median time from HTx to 82-Rb PET was 121 months (81-194) with no difference between groups (p=0.15). Median follow-up time from 82-Rb PET was 29 months (20-40) in the high-CFR group and 36 months (25-48) in the low-CFR group (p=0.26). 12 (24%) patients died of all-cause mortality during follow-up. In the high-CFR group median CFR was 2.43 (2.26-2.81) and in the low-CFR group median CFR was 1.64 (1.36-1.88). In 28 patients (58%) CAV was present at time of 82-Rb PET with no significant difference among groups (p=0.13). Presence of CAV was determined by IVUS (maximal intimal thickness (MIT) = 0.5 mm) in 11 (39%) patients and by coronary angiography in 17 (61%) patients. In 1 (2%) patient CAV was diagnosed during follow-up and in 1 (2%) patient a percutaneous coronary intervention (PCI) was performed during follow-up. Survival function stratified by CFR group was estimated by Kaplan Meier (figure 1) and there was significant difference between the high-CFR group and the low-CFR group (log-rank test p=0.03).

Conclusion: CFR obtained by 82-Rb PET predicts survival in selected long-term HTx patients and holds promise as a non-invasive method for CAV surveillance and risk-stratification after HTx.