

Cardiac allograft vasculopathy and acute rejection surveillance in the same procedure through a single vascular access. High volume center experience

C. Arellano Serrano, J.F. Oteo Dominguez, A. Garcia Touchard, J.A. Fernandez Diaz, M. Del Trigo Espinosa, C. Mitroi, F.J. Hernandez Perez, M. Gomez Bueno, J. Goicolea Ruigomez, J. Segovia Cubero

University Hospital Puerta de Hierro Majadahonda, Cardiology, Madrid, Spain

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Introduction: Cardiac Allograft Vasculopathy (CAV) and Acute Rejection (AR) surveillance after a Heart Transplant (HT) is based on the performance of Coronary Angiography (CAG) that requires arterial access and Endomyocardial Biopsy, normally Right Ventricular Right (RV-EMB), which requires venous access. Depending on the clinical indication, HT patients are referred to the cath lab to perform both procedures in the same day. We evaluated the effectiveness and safety of performing a Left Ventricular Endomyocardial Biopsy (LV-EMB) and a CAG with a single artery access.

Methods: We retrospectively analyzed HT patients referred to cath lab for surveillance of AR and CAV on the same day between January 2018 and March 2021. We compared the procedures performed with two accesses (Group 1; CAG + RV-EMB) versus procedures made with a single artery access (Group 2; CAG + LV-EMB).

Results: 121 Procedures were performed within the indicated period, 96

(79.3%) belong to the double access group and 25 (20.7%) to the single access group. All procedures were successful and without major complications. There were only 2 cases of insufficient sample, one for each group. Baseline characteristics in both groups and AR or CAV presence were similar (table). Total procedure time (52.00 ± 15.30 vs 33.36 ± 18.69 min) and fluoroscopic time (10.70 ± 4.89 vs 6.84 ± 1.82 min) were significantly shorter in the single access group ($p < 0.001$ in both). The most used arterial access in group 2 was the right radial artery (15; 60%) followed by the right femoral artery (5; 20%).

Conclusions: Performing an endomyocardial biopsy and coronary angiography through a single arterial access is as effective and safe as with double access, arterial and additional venous. Procedure time and fluoroscopic time is significantly less when it is performed through the same access.

TABLE: Heart transplant patients referred for surveillance of cardiac allograft vasculopathy and acute rejection between January 2018 and March 2021

	Total 121	Group 1 CAG + RV-EMB 96 (79.3%)	Group 2 CAG + LV-EMB 25 (20.7%)	P
Age (years)	51.7 ± 13.5	53.0 ± 13.1	46.8 ± 14.5	$p = 0.059$
Male (n; %)	90; 74.4%	71; 74%	19; 76%	$p = 0.835$
Body surface (m ²)	1.82 ± 0.19	1.83 ± 0.20	1.79 ± 0.18	$p = 0.367$
Time from HT (months)	41.8 ± 66.7	41.2 ± 69.7	44.3 ± 54.8	$p = 0.838$
Samples (n)	3.50 ± 0.99	3.46 ± 1.02	3.64 ± 0.86	$p = 0.417$
OR Rejection (n; %)	81; 66.9%	63; 65.6%	18; 72.0%	$p = 0.286$
1R Rejection (n; %)	33; 27.3%	29; 30.2%	4; 16.0%	
2R Rejection (n; %)	5; 4.1%	3; 3.1%	2; 8.0%	
Insufficient sample (n; %)	2; 1.7%	1; 1.1%	1; 4.0%	
CAV (n; %)	36; 29.8%	28; 29.2%	8; 32.0%	$p = 0.783$
Procedure time (min)	48,02 ± 17.74	52.00 ± 15.30	33.36 ± 18.69	$p < 0.001^*$
Fluoroscopic time (min)	9,89 ± 4.69	10.70 ± 4.89	6,84 ± 1.82	$p < 0.001^*$
Major complication (n; %)	0; 0%	0; 0%	0; 0%	$p = 1.000$

Group 1: arterial and venous access: coronary angiography + right ventricle endomyocardial biopsy.

Group 2: single arterial access: coronary angiography + left ventricle endomyocardial biopsy.

CAG: coronary angiography; RV-EMB: right ventricle endomyocardial biopsy; LV-EMB: left ventricle endomyocardial biopsy; HT: Heart Transplant; OR-2R Rejection: ISHLT rejection acute cellular rejection grading; CAV: Cardiac Allograft Vasculopathy.

