

Non invasive monitoring of acute allograft rejection in heart transplantation : long-term outcomes of the “no biopsy approach”

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No disclosure.



Introduction

The monitoring and diagnosis of acute cardiac rejection (ACR) after heart transplantation (HT) are based on systematic endomyocardial biopsies (EMB). However, repeated EMB are risky and associated with imperfect sensibility. We sought to investigate the long-term outcomes of a noninvasive follow-up in HT patients using echocardiography.

Methods

All consecutive HT performed and followed in our institution between 1990 and 2016 were reviewed. Echocardiographic screening for ACR was used in our institution from 1990 and specifically relied on detection of early abnormalities in diastolic function. Isovolumic relaxation time (IVRT), pressure half-time (PHT) and peak early mitral flow velocity (E) were measured in 2- and 4-chamber view, in addition to measurement of systolic function and ventricular wall thickness. Since 1998, we used only echocardiography for detection of ACR. Synchronous echo and EMB histological reports were reviewed for patients transplanted before 1998, allowing to assess the sensibility and specificity of echocardiography to diagnose diffuse mild ACR. Overall survival curves were compared between EMB (1990-1997) and no EMB (1998-2016) groups using the log-rank test.

Results

A total of 122 (EMB group) and 144 (no EMB group) HT were performed respectively before and since 1998 (mean age 41 ± 19 vs. 36 ± 19 years, $P=0.025$). Mean follow-up was 8.2 years [0-27]. Survival rates at 1, 5, 10 and 15 years were not different between the two groups (respectively 77.2% vs. 72.5%, 68.3% vs. 62.9%, 54.5% vs. 58.2%, 43.9% vs. 46.3%, $P=0.795$). Mean IVRT (85.3 ± 0.9 vs. 88.8 ± 0.5 ms, $P<0.001$) and PHT (59.7 ± 1.1 vs. 65.2 ± 0.9 ms, $P<0.001$) were significantly lower in case of biopsy-proven ACR, while mean E was higher (78.6 ± 1.5 vs. 73.8 ± 0.9 ms, $P=0.003$). The sensibility, specificity, positive predictive value and negative predictive value of echocardiography to detect ACR were 71.9%, 83.3%, 55.1% and 91.2% respectively.

Figure 1. Comparative survival: with or without biopsy

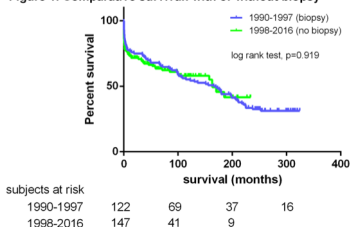


Image 1 : PHT and E echographic evaluation

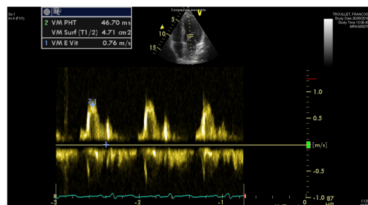
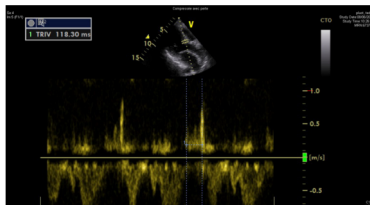


Image 2 : ITRV echographic evaluation



Conclusion

Our findings support the feasibility and usefulness of echocardiography to monitor HT recipients without the need for systematic repeated EMB. Noninvasive screening of ACR did not impair long-term survival in our single-center experience.