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Biopsy free echocardiography surveillance of rejection after Heart Transplant

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Introduction: Surveillance for acute rejection (AR) and cardiac allograft vasculopathy (CAV) is essential for graft and patient survival. CAV can arise and progress without symptoms and subclinical ARs can facilitate. Standard surveillance of AR and CAV is based on routine endomyocardial biopsies (EMBs) and coronary angiographies (CA) at predefined intervals, 9 to 13 times during first post-transplant year, there after 3-4 biopsies annually. These invasive screening tests are distressing, costly and not without complications, yet they cannot identify all sub-clinical ARs. We adopted Biopsy free Echocardiography surveillance for detection and treatment of Rejection.

Material and Methods: sixteen transplants were followed from 2013 November till June 2018. Besides Complete Blood Count, Renal Function test, Liver Function test, Cyclosporine, Tacrolimus level, Electrocardiogram and Three-monthly Echocardiography with Colour Doppler. Thirteen patients are long term survivors. Only one patient out of these was diagnosed to have acute rejection treated with immunosuppression included Methyl prednisolone, Antiarrhythmic antibody after endomyocardial biopsy confirmed grade III rejection. Patient fully recovered.

Results: Doppler tissue-imaging (DTI) and strain-imaging for myocardial wall motion and deformation analysis, allowed quantification of minor myocardial dysfunction for early detection of subclinical AR and CAV. Two patients had mild rejection Grade IIB were treated by increasing dose of steroid and raising level of Calcineurine inhibitor.

Conclusion: DTI and strain-imaging is an important tool enabling more efficient AR monitoring with fewer EMBs instead of unnecessary and distressing routine EMB-screenings. Myocardial velocity and deformation imaging is also suited for early detection of myocardial dysfunction induced by CAV, prognostic evaluation of CAV and timing of CAs aimed to reduce the number of routine CA-screenings.