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Are prognostic scores useful for risk stratification in cardiac transplantation? Insight from a French cardiac surgery center experience

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Purpose: The Seattle Heart Failure Model (SHFM), the Interagency Registry for Mechanically Assisted Circulatory Support (INTERMACS) and the Index for Mortality Prediction After Cardiac Transplantation (IMPACT) score are newly used in heart transplantation for graft allocation. We aimed if these scores could be useful in risk stratification for cardiac transplantation in our center.

Methods: The SHFM, the INTERMACS model and the IMPACT score were retrospectively calculated for 182 heart transplantation candidates and 152 non-VAD patients who underwent urgent and non-urgent heart transplantation between January 2004 and April 2013 in our center. Results were compared with actual mortality 1, 2 and 5 years. The performance of these score in predicting hospital mortality was evaluated with ROC curve.

Results: Predicted mortality at 1, 2 and 5 years with the SHFM score was significantly higher (p<0.001) in patients who required urgent transplantation. This score was not efficient for predicting waiting list mortality (AUC=0.70). A trend toward higher post-transplant mortality at 1, 2 and 5 years was observed in the 1 to 3 INTERMACS class. All patients with INTERMACS I profile died after heart transplantation. The IMPACT score was not efficient in predicting post-transplantation mortality in our population (AUC = 0.56).

Conclusion: The SHFM should be used to discriminate patients on waiting list and discuss the degree of required priority. The INTERMACS classification appears to be promising tools for heart recipient selection. IMPACT score seems not adapted to in our population.

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Heart failure with preserved ejection fraction: an echocardiographic based approach to assess the prognosis. A report from the large prospective KaRen study

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Background: KaRen is a prospective study designed to characterize and follow a cohort of heart failure with preserved ejection fraction (HFP EF) patients. HFP EF remains a challenging syndrome. Patients have clinical signs linked to congestion but left ventricular (LV) EF is > 45%. We sought to test the relevance of echocardiographic parameters as predictors of death or hospitalization for cardiovascular reasons.

Methods and results: Following an acute HF accompanied with NT-proBNP >300 pg/ml (BNP >100 pg/ml) and LVEF >45%, patients were included (n=349). The patients were reassessed by echo-Doppler after 4-8 weeks. Echocardiographies were standardized and the analysis centralized. LVEF was 62±13%, LV global longitudinal strain: – 15±3%, E/e’=12.9±6.2. Left atrial volume: 49±18ml/m². Tricuspid regurgitation: 29±9.9m/s. Two parameters are correlated with the survival without any death or hospitalisation for cardiovascular reason and could be combined in a score: 2 x (E / e’ ) + RA area. This score has a theoretical range between 0 and 14. Based on tertiles of the score, censoring (frequencies of death or hospitalization for heart failure) were 48 (37.80), 67 (57.76) and 85 (75.22) in the 1st tertile – poor prognosis (N = 127), the 2nd tertile – intermediate (N = 116) and the 3rd tertile – good prognosis (N = 113), respectively.

Conclusion: Combination of simple echocardiographic criteria (right atrial area and E/e’ ratio) was found relevant to predict the long term prognosis in a large cohort of patients diagnosed for heart failure with preserved ejection fraction.

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Long term follow up of cardiomyopathy in Friedreich Ataxia

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Friedreich Ataxia (FRDA) is an autosomal recessive cerebellar ataxia, caused by GAA expansion in frataxin gene. Hypertrophic cardiomyopathy is usual in FRDA and cardiac complications are the first cause of death. From 1990 to 2012, we studied 141 patients with genetically confirmed FRDA. Mean age was 30±10y (mean±sd), 54% were female, age at onset 16±8y, disease duration 15±8y and 74% were wheelchair users. Mean length of short GAA expansion was 1.85±0.7Kb and of longer allele 2.6±0.7Kb. Each patient underwent clinical examination, electrocardiogram and echocardiography. 9% had chest pain, 2.8% dyspnea and 9% palpitations. ECG presented T wave abnormalities (88%). 3 patients had atrial fibrillation (AF). LV interventricular septal wall thickness (IVS) was 12±8mm, LV posterior wall thickness (PW) =11±2mm, LV diastolic diameter (BDD) = 43±5mm, LV systolic diameter (ESD) =25±5mm and indexed LV mass (LVMi) =103±31g/m². LV ejection fraction (EF) = 67±7%. News were obtained in 2013, no patient was lost of follow-up. After a median follow up of 12±5y, 16 deaths occurred and 1 patient was transplanted (38±10y). 26 patients (18%) experienced AF (34±10y), 14 (10%) heart failure (36±12y) and 15 (11%) had EF<50% (33±11y). In univariate analysis, the predictors of survival were: short GAA (p<0.0001), age of onset (p=0.0002), ESD (p=0.002), IVS (p=0.0087), EF (p<0.0001) and LVMi (p=0.01). In multivariate analysis, only short GAA (p=0.001), EF (p=0.01) and LVMi (p=0.008) were independent predictors of survival. Short GAA and LVMi remained independent predictors of the first cardiac events in multivariate analysis (p=0.0002, and p=0.0003 respectively). GAA repeats are the best predictors of survival and cardiac events in FRDA patients, but EF and LV mass are also predictors of long term evolution suggesting the importance of cardiac management in Friedreich ataxia.