Abstract: 

Risk stratification of heart failure patients submitted to cardiac resynchronization therapy using a combination of renal function and 123I-mIBG scintigraphy

Authors:
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Topic(s):
Single Photon Emission Computed Tomography (SPECT)

Citation:
Background: Renal insufficiency and cardiac autonomic dysfunction as assessed by 123I-metaiodobenzylguanidine (123I-mIBG) scintigraphy are both associated with poor prognosis in heart failure (HF) patients (pts). However, their incremental prognostic values in HF pts undergoing cardiac resynchronization therapy (CRT) is unclear.

Aims: We sought to assess the prognostic value of baseline renal and cardiac autonomic dysfunction among CRT pts.

Methods: Prospective unicentric study including consecutive HF pts submitted to CRT who underwent clinical, laboratorial, echocardiographic and scintigraphic assessment before and 6 months after device implantation. Renal insufficiency was defined as pre-implantation estimated glomerular filtration rate (eGFR) below 60 mL/min/1.73 m2. Cardiac autonomic dysfunction was defined as pre-implantation 123I-mIBG late heart-to mediastinum (HMR) below 1.4. Patients were classified into 3 groups: high (both renal and autonomic dysfunction), intermediate (either renal or autonomic dysfunction) or low risk (neither renal nor autonomic dysfunction). Composite outcome was defined as cardiac mortality, cardiac transplant or heart failure hospitalization.

Results: A total of 119 patients were included (69.23 ± 11.38 years; 68.1% male; 74.8% in class III of NYHA classification; 31.4% with ischemic cardiomyopathy; LV ejection fraction [LVEF] 26.03 ± 6.99%; 35% with atrial fibrillation). During follow-up (mean 25.5 ± 12.9 months), composite endpoint was documented in 29 pts (24.4%), corresponding to 11.5% per year. Multivariate Cox proportional hazards regression showed that eGFR and late HMR were independent predictors of composite outcome (HR 0.983, 95% CI 0.970-0.997, p 0.017 and HR 0.066, 95% CI 0.005-0.880, p 0.040, respectively). The composite endpoint of pts in high, intermediate and low risk groups according to renal and autonomic dysfunction was 36.7%, 24.5% and 12.1%, respectively (HR 22.487, 95% CI 3.155-160.262, p 0.002, fig. 1). Late HMR remained an important independent predictor of prognosis in the sub-group of pts with renal dysfunction (HR 0.002, 95% CI 0.001-0.753, p 0.040).

Conclusion: Combined baseline renal and autonomic dysfunction provide a significant prognostic value among CRT pts.
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