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## **123I-MIBG SCAN IN DECISION MAKING OF ICD IMPLANTATION IN HEART FAILURE PATIENTS: A SINGLE CENTER EXPERIENCE**

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### **BACKGROUND-AIM**

Malignant ventricular arrhythmias constitute the most common mechanism of sudden cardiac death(SCD).Implantable cardioverter-defibrillators(ICD) are implanted in high SCD risk patients (pts).However ICD implantation should be reserved only for pts with increased risk of arrhythmias.123I-MIBG scan is used to stratify risk and eligibility for ICD therapy.ADMIRE-HF study establishes that myocardial uptake of MIBG, measured as a heart to mediastinum(HM) ratio on planar imaging, is an indicator that reflects HF severity and suggests that cardiac death is more common in subjects with HM < 1,6.Another predictive parameter for HF pts prognosis is Late Summed Score(LSS),when higher than 26 should indicate increased risk of Arrhythmic Events(ArE).

### **METHODS**

In our study 170 pts underwent MIBG scan and were followed up prospectively(median time = 19,7 months) for occurrence of ArE.The average value of left ventricular ejection fraction(LVEF)was 31,1% The study included 69 pts with idiopathic disease and 101 with post-ischemic disease.Ten minutes anterior planar imaging was carried out at 30 and 240 minutes after MIBG injection.SPECT cardiac imaging was obtained at 15 and 255 minutes after tracer administration.Planar images were analyzed and early and late HM ratio were obtained.SPECT studies were processed with filtered back-projection method and polar maps were obtained.Raw data from seventeen segments were semi-quantified using the 5-point visual scoring model of tracer uptake(0,normal - 4,absent).LSS was obtained by SPECT images.We evaluated area under the ROC curve(AUC)for each diagnostic test, and thresholds by means of sensitivity and specificity.Optimal thresholds were chosen by maximization of the sum of sensitivity and specificity(Youden's index).Optimal weights for separate segments were estimated by means of logistic regression, with zero weights fixed by minimization of the Akaike information criterion through forward selection.

### **RESULTS**

Considering ArE risk,a HM ratio value of 1.6 showed a 0.64 sensitivity and 0.415 specificity,whereas a 1,4 cut-off value showed 0.588 sensitivity and 0.809 specificity.Taking into account LSS,using a cut off value of 26 we obtained 0.795 sensitivity and 0.274 specificity,whereas a cut off value of 43 had a sensitivity of 0.625 and a specificity of 0.804.LSS is often difficult to calculate because of the effect of extra-cardiac activity on external segments of polar map.Performing weighted analysis of segments,third medium segment score of septal wall represents the best predictor for ArE with an AUC of 0.81.

### **CONCLUSION**

This result is very significant because mid septal wall is slightly influenced by extra-cardiac activity and, also considering the physiologic role of septal myocardial fibers, can be considered as a reliable parameter for decision managing of the ICD implantation.