



NHAM Congress 2023 Abstracts

1. Risk factors of secondary cardiovascular events in a multi-ethnic Asian population with acute myocardial infarction

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Introduction

Individuals with a recent acute myocardial infarction (MI) event are at a high risk of major adverse cardiovascular events (MACE). We aimed to investigate the incidence and risk factors of MACE in individuals with first-onset MI in a multi-ethnic Asian population, to provide local evidence to support a comprehensive evaluation of prognosis and potential treatment strategies.

Methodology

Data on 1618 first-onset MI cases from the MAVERIK study incorporating ten centers in Malaysia were followed up for 1-year up to November 2020. Secondary fatal and non-fatal MACE were recorded from hospital medical records and the National Registration Department. Multivariable Cox proportional hazard models were used to estimate hazard ratios (HRs) for several demographic and clinical characteristics.

Results

Secondary MACE was observed in 231 (14.3%) individuals including 92 (5.7%) cardiovascular-related deaths. Individuals with secondary MACE had a higher prevalence of known traditional risk factors, higher HbA1c levels, and a higher prevalence of NSTEMI as baseline diagnosis. Both histories of hypertension and history of diabetes were associated with secondary MACE after adjustment for age, sex, and ethnicity (HR 1.60 [95%CI 1.22–2.12] and 1.46 [95%CI 1.09–1.97] respectively). With further adjustment for traditional risk factors, individuals with arrhythmic complications demonstrated higher risks of MACE: new left-bundle branch block (LBBB) (HR 2.86 [95%CI 1.15–6.55]), right-bundle branch block (HR 2.09 [95%CI 1.02–4.29]), and 2nd-degree heart block (HR 2.45 [95%CI 0.59–10.16]). Associations were broadly similar across different age, sex, and ethnicity groups, although somewhat greater for history of hypertension and BMI among women versus men, for HbA1c control in individuals aged >50 years, and for LVEF ≤40% in those with Indian versus Chinese or Bumiputera ethnicity.

Discussion/conclusion

Several traditional and cardiac risk factors are associated with a higher risk of secondary major adverse cardiovascular events. Identification of arrhythmic complications in individuals with first-onset MI may be useful for risk stratification of high-risk individuals.

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2. Electrical characteristics and clinical outcomes during left bundle branch area pacing in patients with narrow QRS and comparison in mechanical synchrony with his bundle pacing, biventricular pacing and right ventricular apical pacing

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Background

Conduction system pacing preserves physiological electrical synchrony in comparison to conventional right ventricular apical

pacing (RVAP). Left bundle branch area pacing (LBBAP), an alternative modality to His Bundle Pacing (HBP) has been recently reported to have higher implant success rates, stable electrical parameters, and fewer lead-related problems. Limited evidence demonstrated that LBBAP may circumvent the technical and electrophysiological difficulties encountered in His bundle pacing. Within LBBAP, the capture of the left bundle branch potential is nonuniform, and different electrical characteristics have been demonstrated among patients. It remains unclear whether LBBAP can deliver physiological cardiac synchronisation and produce beneficial hemodynamic benefits.

Objectives

To examine the electrical characteristics and clinical outcomes of LBBAP and compare mechanical synchrony among LBBAP, HBP, Cardiac Resynchronization Therapy (CRT), and RVAP.

Methods

This single-centre, prospective study recruited patients with narrow intrinsic QRS complex scheduled for LBBAP from 2019 to 2022. Electrocardiograms and echocardiograms were performed before and after 12 months after implantation to evaluate electrical and mechanical characteristics. Two-dimensional speckle tracking imaging (2D-STI) and tissue Doppler Imaging (TDI) were used to evaluate intra- and interventricular synchronization. Other parameters analysed included conventional 2D M-mode Doppler variables, mitral regurgitation, tricuspid regurgitation, and left ventricular ejection fraction. Mechanical synchrony of LBBAP was compared with HBP, CRT, and RVAP patients available in the hospital registry. Patients were followed up for pacing parameters and adverse events (composite of all-cause mortality, urgent heart failure visits, and hospitalization for decompensated heart failure).

Results

Following LBBAP, the paced QRS duration was wider compared to the native QRS complex (105.04 ± 7.88 ms vs 90.05 ± 9.98 ms). No adverse events were noted during follow-up (13.1 ± 3.87 months) and pacing parameters remained stable without remarkable changes in sensing amplitude, pacing threshold, and pacing impedance. LBBAP and HBP delivered efficient mechanical synchronization in comparison to CRT and RVAP evidenced by significantly shorter peak strain dispersion (PSD) and interventricular mechanical delay (IVMD). No significant differences in stroke volume or atrioventricular valvular regurgitation were noted between LBBP capture, HBP, CRT, and RVAP.

Conclusion

Left bundle branch region pacing has demonstrated effectiveness in improving mechanical synchronization and may represent an alternative to cardiac resynchronization therapy.

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3. Predictors of thromboembolic events in patients prescribed with dabigatran in Malaysia

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Background

The incidence of thromboembolic events in patients on dabigatran is low compared to warfarin, but the consequences of these events can be catastrophic. Monitoring dabigatran therapy in non-valvular atrial fibrillation (NVAF) patients based on pharmacokinetic and pharmacodynamic response remain debatable.

Objective

To determine the association between anti-thrombin activity, plasma levels and 1-year outcomes in NVAF patients on Dabigatran.

Methods

Between February 2019 and April 2022, 304 NVAF patients prescribed with Dabigatran were recruited. Drug Level (DL) and Ecarin clotting time (CT) were assessed with LC-MS/MS and point-of-care Clotpro(R), Dynabyte, Germany, respectively. Patients were followed up for a median of 365 days to determine major adverse cardiovascular and cerebrovascular events (MACCE), and bleeding events.

Results

The mean age was 69.06 ± 9.69 years, 63.2% were male and 28.0% had a history of ischemic stroke (IS). The DL ranged from 0 to 478.28 ng/ml (Mean \pm SD: 52.16 ± 58.67 ng/ml) while CT from 60-1172s (Mean \pm SD: 361.21 ± 188.77 s). Group A (46.1%) were prescribed Dabigatran 110 mg BD and Group B (53.9%) 150 mg BD regimen. Prescribed doses were not associated with DL ($p = 0.805$) and CT ($p = 0.996$). Moderate correlation was observed between DL and CT ($r = 0.638$, $p < 0.001$). Significant inverse correlations were determined between creatinine clearance (Crcl) and DL ($r = -0.215$, $p < 0.001$); Crcl and CT (-0.313 , $p < 0.001$). When divided into quartiles, similar numbers were found in the lowest quartile group (LQG) for both DL < 14 ng/ml and CT < 232 s (23.7% and 24.7%). Additionally, 12.5% of the total population fell into the LQG for both markers (BLQG). A total of 13.5% MACCE and higher MACCE was observed in BLQG (18.4% vs. 12.8%), $p = 0.341$. Ischemic stroke was 2.0%. (Group A vs Group B: 4.3% vs. 0%, $p = 0.009$). Being in BLQG was an independent predictor of IS compared to the rest (7.9% vs. 1.1%; Adj HR: 8.7; 95%CI: 1.3-57.3, $p = 0.024$). A total of 19 patients (6.3%) died. No association was found between bleeds (1.0%) and being in the highest quartile group for both DL ≥ 71 ng/ml; CT ≥ 442 s ($p = 1.000$).

Conclusions

Patients in BLQG had 9-fold risk of having IS despite being on Dabigatran therapy. Monitoring DL and CT may be beneficial in managing dabigatran therapy in patients with NVAF to further improve clinical outcomes.

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4. The effect of bariatric surgery on left ventricular diastolic function and global longitudinal strain

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Introduction

Obesity is known to be associated with left ventricular diastolic dysfunction due to its effect on our metabolism such as elevated