ratio of energy delivery and the average temperature reached during an ablation session had no effect on MES generation.

Conclusions: Several biological parameters of energy delivery demodulated a significant correlation with a higher rate of microbubble production during PV with the PVAC. Most of these parameters can be linked to a variable or poor electrode-tissue contact. Modifications in the catheter design and in the software regulation of the temperature handling of the generator might improve the safety of this technology.

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Incidence of periprocedural complications with dabigatran versus other current anti-coagulation modalities for patients undergoing an atrial fibrillation ablation

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Purpose: In October of 2010, the FDA approved dabigatran etexilate to prevent thromboembolic events in patients with atrial fibrillation (AF). There is a paucity of data to evaluate the risk of periprocedural complications (PC) in patients undergoing an AF ablation using dabigatran as the anticoagulation agent.

Methods: We retrospectively reviewed 422 charts of patients with persistent or paroxysmal AF who underwent a radiofrequency ablation from January of 2011 to January 2012 at our institution. We placed patients into groups based on their peri-procedural anticoagulation strategy. We categorized PC events as major (thromboembolic event or tamponade) or minor (non-life threatening bleeding). All PC events that occurred within 30 days of the AF ablation were counted.

Results: In the WC group 23 patients (12.4%) had PCs (20 minor and 3 major), in the WH group 16 patients (10.5%) had PCs (11 minor and 5 major) and in the D patients 4 patients (4.8%) had PCs (3 minor and 1 major). For the D and WH groups anticoagulation was held an average of 1 and 1.9 days prior to the procedure respectively. Of the 9 major complications, 6 patients had pericardial or pleural effusion, 3 had a TIA or stroke, and 1 patient had a MI. Of the 34 minor complications, 24 patients had a groin hematoma, 2 had hemoptysis, 1 had a spontaneous oral-bital hematoma, 3 had a GI bleed, 1 had a small hemothorax, and 3 had hematuria. Each anti-coagulation group had comparable amount of patients with paroxysmal and persistent AF (p = NS). There was no difference in the rate of major or minor PCs between any of the anticoagulation groups (p = 0.67 and 0.39 for D vs WC for major and minor PC respectively and p = 0.99 and p = 0.06 for D vs WH for major and minor PCs respectively).

Conclusions: Dabigatran is becoming a widely used medication for patients with AF; but little is known about the risk of PCs for patients using dabigatran around the time of an AF ablation. In our series of 422 patients there was no difference in the rate of major or minor PCs for patients on periprocedural dabigatran as compared to warfarin based anti-coagulation strategies.

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Methods to monitor dabigatran: first clinical experience in patients with atrial fibrillation

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Purpose: Atrial fibrillation (AF) is a major cause of thromboembolic stroke. The oral direct thrombin inhibitor dabigatran is increasingly used in patients with AF.

Routine laboratory monitoring is currently not recommended for dabigatran, but there are situations (e.g. surgery, bleeding or thromboembolism during treatment, compliance) when measurements of the drug and/or its effect are desirable. We studied 73 patients with AF, median age 68 (range 49-86) years, 66% men, mean CHADS2 score 1.6. 58 were treated with dabigatran 150 mg BID, 15 with 110 mg BID. Pre-dose samples were obtained in the morning. Plasma concentrations were measured using liquid chromatography with mass-spectrometry (LC-MS/MS).

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Methods: For indirect determination of dabigatran were: Hemoclot thrombin inhibitior (HT; Hyphen) and Ecarin clotting assay (ECA; Stago) as well as PT-INR (Owen reagent SPA+, Stago) and aPTT (Silica reagent, Automatic, Stago). Cre- atinine clearance (CrCl) was calculated by Cockcroft-Gault formula.

Results: The median dabigatran concentration by LC-MS/MS was 51 ng/mL with marked variation (range 9-163). There were moderate to strong correlations between LC-MS/MS and effects estimated by HT (r² = 0.76) and ECT (r² = 0.81). The lowest calibration for rHt was 30 ng/mL. APTT correlated more weakly with dabigatran concentrations (r²=0.40; p<0.001); aPTT could be normal even at therapeutic dabigatran concentrations and could be prolonged despite low concentrations. PT-INR did not correlate with LC-MS/MS. Median CrCl was 86 mL/min (range 39-155) and there was no obvious correlation between CrCl and plasma concentrations, HTI or ECT.

Conclusions: We found a moderate to strong correlation between dabigatran plasma concentrations in plasma and the HTI and ECA assays. These methods may thus be used to roughly estimate the intensity of dabigatran anticoagulation in a clinical setting. However, low values should be cautiously interpreted, especially for HTI. LC-MS/MS is the gold standard and the only method that can be used to monitor low levels or infer absence of dabigatran. The aPTT assay was insufficiently sensitive to dabigatran and PT-INR is not useful at all. Most real life patients with a normal CrCl had plasma concentrations of dabigatran in the low range (compared to FDA-data from the RE-LY study). Thus, the bleeding risk may not be imminent while protection against stroke could be limited in prothrombotic real life AF patients.

Rapid Fire – MOVE TO THE THIRD DIMENSION

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Dobutamine stress echocardiography: is 3D ready for prime time?

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Purpose: Accurate and reproducible evaluation of regional function remains challenging in Dobutamine stress echocardiography (DSE), especially in patients with occlusions.

Methods: We included 146 consecutive patients indicated for DSE (GE Vivid-7). All patients had a standard 2D acquisition (eye balling), longitudinal strain (LS) analysis by speckle tracking, 3D-MCE and full volume acquisitions with and without myocardial contrast (MCE, Sonovue, single shot 0.4 ml given at rest and peak stress) for left ventricular opacification. Chi-square test was done to assess the relationship between echo result and early revascularization. Kappa statistic was performed to assess agreement between 2D and 3D echo studies as well as between 3 independent readers with varying experience. Logistic regression analysis was done to predict late major cardiac events (late percutaneous intervention, CABG, myocardial infarction, cardiac death) at a follow up of 36 months.

Results: The mean age was 63±12 years (61% males, BMI 26.4±4.3) and 78/146 (53%) with known coronary artery disease. Only one third of the patients had a successful LS quality at baseline. Overall, they improved consistently in others after administration of echo contrast (p<0.001). Reliable LS assessment was possible in 85% at baseline but only in 58% (p<0.0001) at peak stress despite maximizing frame rate. The 2D studies showed abnormal DSE in 42/146 patients, and 57/146 abnormal DSE with 3D MCE. The kappa statistic of agreement between 2D and 3D MCE was 0.106 which is a low agreement. For the 2D DSE, early revascularization was performed in 12/42 (29%) of the abnormal studies and 16/104 (16%) of the normal studies, showing borderline significant relationship between 2D DSE result and early revascularization (X² = 3.25, df =1, p = 0.0712). While for the 3D-MCE, none of the normal studies, and 28/47 (99%) of the abnormal studies got early revascularization showing significant relationship between 3D-MCE DSE result and early revascularization (X² = 50.47, df =1, p < 0.0001).

Conclusions: The data showed higher diagnostic accuracy of 3D-MCE DSE compared to 2D DSE for early revascularization, with excellent inter reader agreement. The probability of a late event was higher when 3D-MCE DSE was abnormal.