1015 Intravenous Amiodarone in Cardioversion of New-Onset Atrial Fibrillation

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Background: Paroxysmal atrial fibrillation (PAF) is one of the most common causes of hospital admission. However, until now, no adequate antiarrhythmic therapy has been accepted as the standard of care. Intravenous cardioversion of PAF. Amiodarone seems to be a promising candidate, but only a few, small, randomized trials are available and the results are inconsistent.

Aim of the study: To assess efficacy of intravenous amiodarone in cardioversion of PAF.

Methods: 160 patients with PAF lasting less than 24 hours were randomly assigned (2:1) to amiodarone group (n=106) receiving 5 mg/kg as a 30 min iv infusion, followed by infusion of 10 mg/kg during 20 hours and to the control group (n=54). Both groups received 1500 mg of potassium chloride and 8 g of magnesium sulphate (GIKM), which is electrolyte supplementation routine used in our department in patients with PAF. Patients requiring emergency DC cardioversion were excluded.

Results: Up to 6 hours after initiation of treatment 53 (50%) patients in amiodarone group and 14 (26%) patients in control group were converted to sinus rhythm (p=0.05).

Twenty hours after initiation of the therapy sinus rhythm was restored in 88 (83%) patients in the amiodarone group and in 44 (43%) patients in the control group (p=0.001).

Conclusion: This study, which is one of the largest ever done on this subject, showed that amiodarone is effective in termination of PAF lasting less than 24 hours. It may be particularly useful in patients with left ventricular dysfunction, in whom class I antiarrhythmic agents are contraindicated.

1015-10 Effect of Atrial Fibrillation Duration on Probability of Immediate Recurrence After Transcatheter Cardioversion

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Background: An immediate recurrence of atrial fibrillation (IRAF) appears to be more common after early restoration of sinus rhythm with an implantable atrial defibrillator than after elective transcatheter cardioversion, suggesting that the probability of IRAF may be related to the duration of AF.

1015-11 Comparison of the Safety and Efficacy of Enoxaparin With Unfractionated Heparin and Phenprocoumon as Anticoagulation in Cardioversion of Nonvalvular Atrial Fibrillation

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In cardioversion (CV) of atrial fibrillation (AF), anticoagulation with UFH plus oral anticoagulant (OAC) is recommended. Conventional CV (OAC for 3 weeks and 4 weeks after CV) or transesophageal echocardiography (TEE)-guided CV (i.v. UFH infusion plus 4 wks of OAC, upon exclusion of left atrial (LA) thrombus) can be used. CV using i.v. UFH/OAC is associated with extended hospitalization and stringent antiarrhythmic monitoring. Therefore LMWH may be a feasible alternative. Patients (n=496) with non-valvular AF lasting 48 h - 1 year underwent conventional treatment (group A, n=85) or TEE-guided CV (group B, n=411). Patients were randomized to either the LMWH enoxaparin (n=243), or to UFH plus the OAC phenprocoumon (n=253). Patients without TEE-confirmed LA thrombus underwent ED CV (group B1); patients with LA thrombus were anticoagulated for a further 3 weeks, and under CV if repeat TEE did not detect LA thrombus (group B2). The combined primary efficacy and safety endpoint was: stroke, transient ischemic attacks, systemic embolism, death, and major bleeding events.

Results: In the per-protocol population (n=428), there were no differences in the baseline characteristics of the enoxaparin (n=216) and UFH/OAC (n=212) groups. LA thrombi were detected in 9.7% of group B (n=307). Mean duration of treatment was 46±11 days, (group A, 29±5 days; group B1, 48±15 days; group B2). Successful CV was achieved in 70.8% (303/428 patients): 66.2% (143/216) for enoxaparin and 75.5% (160/212) for UFH/OAC, respectively (p=0.043, explorative). At the end of treatment, sinus rhythm was still present in 70.8% (214/303 patients) of successfully cardioverted patients: 67.1% (96/143) for enoxaparin and 73.8% (118/160) for UFH/OAC, respectively (p=0.21, explorative). Incidence of the primary endpoint was 3.2% (7/216) for enoxaparin vs 5.6% (12/212) for UFH/OAC (p=0.017, confirmatory for equivalence with delta=2%). Conclusions: Enoxaparin shows non-inferior efficacy and safety to UFH/OAC in CV of AF, and may be preferred due to its reproducibility of anticoagulative effect and more convenient s.c. administration.

1015-12 Brain Natriuretic Peptide Levels Predict Successful Cardioversion and Rhythm Maintenance in Patients With Chronic Atrial Fibrillation

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Background: Brain natriuretic peptide (BNP) is released from the heart by hemodynamically induced muscle stretch. Patients with atrial fibrillation have higher levels of BNP than controls in sinus rhythm. The aim of this study is to assess the usefulness of BNP as a predictor of successful cardioversion in patients with chronic atrial fibrillation.

Methods: We enrolled 20 patients undergoing cardioversion for chronic atrial fibrillation. BNP levels were measured prior, 30 min, and 2 hours after elective cardioversion. Baseline echocardiograms and 12-lead electrocardiogram were obtained from all patients. Patients with valvular disease, previous mitral valve surgery or moderate to severe left ventricular dysfunction were excluded.

Results: The mean BNP level and mean heart rate were significantly higher before cardioversion than 30 min after (216 ± 178 versus 194 ± 195 pg/ml, p=0.057; 80 ± 22 versus 76 ± 11, p=0.005), respectively. Patients' mean age was 71 ± 11, 11 patients who reverted back to atrial fibrillation after two weeks had baseline BNP of >200 ± 133 pg/ml, whose whose continued to be in sinus rhythm for two weeks. In baseline BNP of 149±124 pg/ml, p=0.027. No correlation was found between left atrial size and BNP levels. Left atrial size did not predict successful cardioversion, although most of the patients had mild left atrial dilatation (left atrial diameter = 4.6 ± 0.6 cm).

Conclusion: In patients with chronic atrial fibrillation BNP levels may predict successful cardioversion and maintenance of sinus rhythm two weeks after cardioversion.

1015-13 Highly Sensitive C-Reactive Protein Level Predicts Recurrence of Atrial Fibrillation After Cardioversion in Patients on Antiarrhythmic Drugs

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C-Reactive Protein (CRP) is a sensitive marker of systemic inflammation. Chronic elevations of baseline CRP is a marker of a low levels systemic inflammation and has been used to predict increased risk for future myocardial infarction and stroke. Recently CRP levels...
has also been shown to be elevated in patients with non-postoperative atrial arrhythmias, specifically atrial fibrillation (AF). We postulated that a high CRP level would predict AF recurrence in patients on antiarrhythmic drugs (AAD). Methods and results: One hundred and fifty seven patients who had undergone direct-current cardioversion for AF between November 2001 and June 2002 were identified (Table 1). All had CRP levels shown prior to the procedure. All these patients had been on AAD prior to and following cardioversion. All patients were followed in our out patient clinic. AF patients had recurrence of AF and 48 patients did not have recurrence of AF and responded to AAD. Using the Mann-Whitney nonparametric test the mean hsCRP level in the group with recurrence was 0.25 mg/l which was statistically higher than the group with no recurrence 0.204 (p-value<0.001). Left ventricular ejection fraction (LVEF) was related to hsCRP in multivariate analysis, however LVEF was not statistically different between both groups. The odds ratio of developing recurrence was 9 with every 0.5 unit increase over 0.554 (p-value<0.001).

Conclusion: CRP levels predict recurrence of AF on patients. This may help in risk stratification and aid in choosing appropriate alternative therapy in patients with AF.

POSTER SESSION

1016 Predictors of Lethal Ventricular Arrhythmias

Sunday, March 30, 2003, 9:00 a.m.-11:00 a.m.
McCormick Place, Hall A
Presentation Hour: 10:00 a.m.-11:00 a.m.

1016-5

Waveslet Analysis of Heart Rate Variability Preceding Ventricular Arrhythmias Retrieved From Implantable Cardioverter Defibrillators in Patients With Myocardial Infarction

Hagen Buri, Philippe Chevalier, Mohammad Arzi, Paul Rubel, Jocelyne Fayn, Gilbert Richmon, Jean-Yves Le Huecuy, Paul Toumboul, Hospital Louis Pradel, Lyon, France

Background: Wavelet transform (WT) is well adapted for analyzing non-stationary signals such as heart rate recordings. Changes in autonomic tone leading to ventricular arrhythmias may be studied by heart rate variability (HRV). Analysis at different scales by WT can separate High Frequency (HF) from Low-Frequency (LF) signals. Instantaneous HF components reflect vagal activity, while LF components are under the influence of both sympathetic and parasympathetic tone. Thus, an increased LF/HF ratio may indicate either increased sympathetic activity or decreased vagal tone. Methods: 42 patients (38 males, age 64±8 years) with a history of myocardial infarction implanted with a Biotronik® Physux XM or Microphysx defibrillator (with an extended memory) were included. Each patient required electrical therapy for at least one episode of ventricular arrhythmia. HR intervals preceding events were retrieved from the device, and HRV studied by WT. Results: 117 episodes of ventricular arrhythmia (cycle length 358±22 ms) were retrieved. LF/HF showed a significant increase during the 5 minutes preceding arrhythmia onset.

Conclusion: Analysis of HRV by WT shows evidence of increased sympathetic tone or parasympathetic withdrawal just before the onset of ventricular arrhythmias.

1016-6

Does BiVentricular Pacing Decrease the Incidence of Microvolt T-Wave Alternans?

Raymond C. Leung, Sajed Gulamhussein, Albert Van Schaik, Katherine Kavanagh, University of Alberta, Edmonton, AB, Canada

Background: BiVentricular pacing (BiVP) improves symptoms and hemodynamics in heart failure patients with ventricular conduction delay. Controversy exists as to why a positive effect was seen on ventricular arrhythmias. Specifically, atrial fibrillation (AF) recurrence was 0.25 mg/l which was statistically higher than the group with no recurrence 0.204 (p-value<0.001). Left ventricular ejection fraction (LVEF) was related to hsCRP in multivariate analysis, however LVEF was not statistically different between both groups. The odds ratio of developing recurrence was 9 with every 0.5 unit increase over 0.554 (p-value<0.001).

Conclusion: CRP levels predict recurrence of AF on patients. This may help in risk stratification and aid in choosing appropriate alternative therapy in patients with AF.

1016-7

Waveslet Analysis of Heart Rate Variability Preceding Ventricular Arrhythmias Retrieved From Implantable Cardioverter Defibrillators in Patients With Myocardial Infarction

Hagen Buri, Philippe Chevalier, Mohammad Arzi, Paul Rubel, Jocelyne Fayn, Gilbert Richmon, Jean-Yves Le Huecuy, Paul Toumboul, Hospital Louis Pradel, Lyon, France

Background: Wavelet transform (WT) is well adapted for analyzing non-stationary signals such as heart rate recordings. Changes in autonomic tone leading to ventricular arrhythmias may be studied by heart rate variability (HRV). Analysis at different scales by WT can separate High Frequency (HF) from Low-Frequency (LF) signals. Instantaneous HF components reflect vagal activity, while LF components are under the influence of both sympathetic and parasympathetic tone. Thus, an increased LF/HF ratio may indicate either increased sympathetic activity or decreased vagal tone. Methods: 42 patients (38 males, age 64±8 years) with a history of myocardial infarction implanted with a Biotronik® Physux XM or Microphysx defibrillator (with an extended memory) were included. Each patient required electrical therapy for at least one episode of ventricular arrhythmia. HR intervals preceding events were retrieved from the device, and HRV studied by WT. Results: 117 episodes of ventricular arrhythmia (cycle length 358±22 ms) were retrieved. LF/HF showed a significant increase during the 5 minutes preceding arrhythmia onset.

Conclusion: Analysis of HRV by WT shows evidence of increased sympathetic tone or parasympathetic withdrawal just before the onset of ventricular arrhythmias.

1016-9

Infarct Morphology Identifies Patients With Substrate for Ventricular Tachycardia

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To evaluate whether infarct morphology identifies patients (pts) with substrate for inducible monomorphic ventricular tachycardia (TM), 18 pts (age 60±11 years, 60% male) with coronary artery disease undergoing electrophysiologic studies (EPS) had cine and contrast-enhanced (gadolinium) MRI. Planimetry of the contrast images was used to measure infarct mass and surface area by two readers blinded to EPS results. Results: 21 (44%) pts had no inducible ventricular arrhythmias (No VT). 19 (37%) pts had inducible VT, cycle length 223±49 ms, and 9 (19%) pts had inducible polymorphous VT or ventricular fibrillation (PVTNF). Table shows MRI results (in table, * = p<0.001 vs No VT). There were no differences in ejection fraction (EF) among the three groups, but pts with VT had larger infarcts. By linear regression, infarct size correlates negatively with EF (R2=0.21 to 0.27, p<0.001). Infarct size was a better discriminant of inducible VT than EF. The findings for PVTNF were intermediate between those for No VT and VT, consistent with the nonspecific nature of this induced arrhythmia. Transmural infarct, aneurysm, and infarct location did not discriminate between pts with inducible VT and pts with No VT.

1016-10

Frequency of Implantable Cardioverter Defibrillator Discharges in New York Following the World Trade Center Attack

Anusha Andhlikar, Marcin Kowalski, Atul Kumar, Valentin Surna, Margot E. Viskra, Frederick A. Hoffman, Rengel Heng, Irina Konovalova, Philip Phillips, George Ruedt, Alan Rozanski, Jonathan S. Steinberg, St. Luke's-Roosevelt Hospital Center and Columbia University College of Physicians and Surgeons, New York, NY, University of Massachusetts Medical School, Worcester, MA

Background: We have recently described an increase in the ICD discharge rate of patients in the New York metropolitan area following the World Trade Center (WTC) attack on 9/11/01. In our cohort of 200 patients there was a 2.3-fold increase in risk in the 30 days after 9/11 versus the 30 days before. We sought to evaluate the ICD discharge rate in this population over an 8 month observation period and to determine when the increased rate of discharges returned to pre-9/11 levels.

Methods: To determine the pattern of daily arrhythmia events from 5/11/01 to 1/10/02, triggering ICD discharges over the 8 month time period, a logistic model and a general-ized extending equation approach was used. Results: The incidence of ICD activation for ventricular tachycardia for May through September 2001 was 9±2%; for October through December 2001 was 5±1%; versus 6% for September 2001. Logistic regression model identified the 30 day period following 9/11 as statistically different (p=0.0038) than the other 30 day intervals. (see figure)