CONCLUSIONS

GW26-e4436

Reduction of esophageal injury by contrast visualization of the esophagus during radiofrequency ablation for atrial fibrillation

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OBJECTIVES

Ablation along the posterior wall of left atrium can result in atrioesophageal fistula due to thermal injury to the esophagus. The purpose of our study was to investigate whether contrast visualization of the esophagus reduces collateral injury during atrial fibrillation (AF) ablation.

METHODS

78 patients with paroxysmal AF underwent circumferential pulmonary vein isolation (PVI) guided by ingested contrast medium of esophagus with follow-up endoscopy within 24 hours. Cine imaging of the esophagus was performed at the beginning of ablation, after adjacentpulmonary vein isolation, and at the end of the procedure. Positions were measured by fluoroscopic images. The ablation lesion set was modified to minimize overlap with the esophagus in the contrast-guided group and a single final ingestion was performed at the end of the procedure for the control group. Esophageal damage was assessed by esophageoscopy within 24 hours.

RESULTS

The incidence of esophageal damage was 20.5% (8/39) in control group and was 5.1% (2/39) in visualization group (p < 0.05). The ablation lesion set crossed over the esophagus in 46.2% of patients in the control group whereas the ablation line could not be altered away from the esophagus in 15.4% of patients in visualization group (p < 0.01). Only 1.9% (1/54) patients in non-crossed group had esophagus damage, but 37.5% (9/24) patients in crossed group had lesions (p < 0.01).

CONCLUSIONS

Esophageal contrast-guided PVI can reduce esophageal damage in patients referred for AF ablation.

GW26-e0275

Active-fixation Atrial Pacing Leads Following Amputation of Right Atrial Appendage: Long-term, Single-centre Study

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OBJECTIVES

To investigate the long-term feasibility and stability of active-fixation pacing leads following amputation of right atrial appendage (RAA).

METHODS

Active-fixation leads were used in 85 consecutive sick sinus syndrome or high-grade atrioventricular block patients with (Group 1, n=50) or without (Group 2, n=35) amputation of RAA underwent implantation of dual-chamber pacemakers. X-ray, threshold, sensing, impedance, average implantation exposure time and lead-related complications were evaluated at implantation (D0), and at 1, 3, 6, 12, 24, and 36 months.

RESULTS

All leads were successfully implanted. Over long-term follow-up, all leads remained stable as evidenced by X-ray. Initial sensing of both groups were equal and stable in both groups. Impedance declined slightly (P>0.05) from D0 to M1 and remained stable thereafter. Threshold of atrial pacing lead decreased significantly during the first 3 months and remained stable thereafter while the threshold of ventricular pacing lead remained stable throughout the whole study, with neither of them showing significant difference between groups. No lead-related complications were found.

CONCLUSIONS

Active-fixation atrial pacing leads can be successfully fixed to the bottom of the residual appendage in patients undergo amputation of RAA with overall good and stable long-term parameters.

GW26-e1241

Does Anemia Cause QT Prolongation in Patients with Hematologic Disorders?

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OBJECTIVES

The prolongation of QT interval is associated with cardiovascular mortality and morbidity. QT prolongation is common in patients with sickle cell disease and it is reported that a lower hemoglobin level correlates with a longer QT interval in these patients. Such correlation, however, has not been determined in patients with other types of hematologic disorders. This study aims to investigate whether there is an association between reduced hemoglobin and QT interval in patients with anemia caused by disorders other than sickle cell disease.

METHODS

ECGs of patients with hemoglobin (Hgb) <10 g/dl enrolled from our Hematology Department were evaluated for the presence of QT prolongation using Bazett’s formula for heart rate corrected QTc. In subjects with QRS duration >120 ms, JT index (JT–I–T/HR–100) or JT correction (JTI) was applied to estimate their repolarization time. It is reported that JTI > 112 is an indication of delayed ventricular repolarization. Among study subjects (Hgb 8.0 ± 1.6 g/dl, range 1.9-9.9 g/dl), moderate anemia between 6-9 (g/dl) accounted for 56% and severe anemia (Hgb < 6 g/dl) for 12%. Anemia was related to leukemia in 40% (121/300), lymphoma in 28%, myelodysplastic syndrome in 9%, multiple myeloma in 8%, aplastic anemia in 4%, and the remainder with other types of hematologic disorders. None of the patients had left ventricular hypertrophy, electrolyte abnormalities, or were receiving QT-prolonging drugs.

RESULTS

The average QTc in 300 patients with hematologic disorders was 441 ± 23 ms. There were 21 patients with a QTc >440 ms. Nevertheless, 33% (7/21) of them had a prolonged depolarization time (QRS duration >120 ms) including complete left (4), right bundle branch blocks (1) and right ventricular pacing (2), respectively. Their JT index were all <112 ms, suggesting the repolarization time was normal. Therefore, only 5% (1/300) of all anemic patients had a borderline to moderate QTc prolongation (461 ± 13 ms; range: 441-479 ms) and none of them experienced syncope, cardiac arrest, or sudden death. Linear regression analysis showed no significant correlation between reduced hemoglobin level and QT prolongation (P=0.587).

To determine whether the severity of anemia affects QTc interval, study subjects were then divided into three groups separated by Hgb levels. The result of ANOVA showed no statistical significance between the lengths of QTc in the 3 groups (P=0.656).

CONCLUSIONS

In anemic patients without left ventricular hypertrophy, electrolyte imbalances, use of QT-prolonging drugs, or any other identifiable causes of ALQTS, the QT interval is normal in most cases, and there is no significant correlation between hemoglobin level and QT interval.

GW26-e1027

Electric Pulse Current Stimulation promotes mShox2 Genetically Modified Canine Mesenchymal Stem Cells generating If current

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OBJECTIVES

To investigate whether mShox2 genetically modified canine mesenchymal stem cells (cMSCs) induced by electric pulse current stimulation (EPCS) could generate If current in vitro.

METHODS

The cMSCs were transfected with pLentis-mShox2-RFP or pLentis-RFP. After EPCS induction, these cells were divided into four groups: the RFP transfected cMSCs (Group A as control), the RFP transfected cMSCs induced by EPCS (Group B), the mShox2-RFP transfected cMSCs (Group C), and the mShox2-RFP transfected cMSCs induced by EPCS (Group D). We examined the kinetic characteristics of generated inward current by patch-clamp. We then evaluated Ncx2.5, Tbx3, HCN4, CX43 and Cx45 expression using qRT-PCR and Western blotting.

RESULTS

The time and voltage-dependent inward current recorded in group C was confirmed as the If current. After EPCS induction, the detection rate of this If current was increased (Group D), the current amplitude and density were extend. However, there were no If current in groups A and B. Compared with the control group (Group A), Tbx3, HCN4, CX43 were significantly up-regulated but Nkx2.5, Cx43 were down-regulated in groups C and D. Whereas Ncx2.5 and Cx43 were up-regulated in group B.

CONCLUSIONS

Our results suggest that EPCS can promote the differentiation of mShox2 genetically modified cMSCs into pacemaker-like cells, generating If current.

GW26-e1798

Successful Treatment of a LQT8 Case with Mexiletine: 4 years of experience

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OBJECTIVES

Timothy syndrome (TS), also known as LQTS8, is caused by dominant gain-of-function mutations in Cav1.2. Previously, we
Meta-analysis of the HAS-BLED score for predicting major bleeding risk in anticoagulated patients with atrial fibrillation

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OBJECTIVES Three validated HAS-BLED, HEMORR,HAGES and ATRIA bleeding scores, or even the CHADS2 and CHA2DS2-VASc stroke scores, could be used to evaluate atrial fibrillation(AF) patients' major bleeding risk. These scores have been validated in the various independent studies. We therefore compared the diagnostic accuracy of the HAS-BLED score to that of other risk scores in anticoagulated patients with AF.

METHODS We systematically searched the Cochrane Library, Medline, PubMed and Embase databases for studies of the comparative diagnostic performance between the HAS-BLED score and any of the HEMORR,HAGES, ATRIA, CHADS2 or CHA2DS2-VASc scores. Data were extracted from 11 studies, which were analyzed using various statistical methods such as the discrimination, calibration, net reclassification improvement(NRI) and integrated discrimination improvement(IDI) analysis. The primary endpoints of AF patients were also defined dichotomously and compared between scores <3 and ≥3 for the HAS-BLED score.

RESULTS 11 studies were identified for meta-analysis. We performed the discrimination analysis by means of C-statistic with 95% confidence interval(CI). The pooled C-statistics respectively were 0.65(0.61-0.69) for HAS-BLED, 0.63(0.61-0.66) for HEMORR,HAGES, 0.63(0.56-0.72) for ATRIA, 0.55(0.49-0.61) for CHADS2, and 0.56(0.53-0.59) for CHA2DS2-VASc. The HAS-BLED score demonstrated no significant differences of C-statistic for major bleeding risk prediction when compared to the ATRIA or HEMORR,HAGES bleeding scores, but gets the opposite results when compared to the CHADS2 or CHA2DS2-VASc stroke scores. These results are further supported by the significant positive NRI and IDI values. Calibration analysis indicates the HAS-BLED score over-predicts the risk of bleeding in the low (RR=1.16, 95%CI 0.63-2.13; P=0.64) risk stratification, but under-predicts the risk of bleeding in the moderate (RR=0.66, 95%CI 0.51-0.84; P=0.03) and high (RR=0.49, 95%CI 0.70-1.10; P=0.27) risk stratifications. There are no significant differences between the predicted and the observed major bleeding events individually, patients with HAS-BLED scores ≥3 have a greater risk of major bleeding(RR=2.07, 95%CI 1.22-3.42; P<0.0001) than patients with HAS-BLED scores <3. A chi-squared test for trend shows an increasing trend in the occurrence of major bleeding events across three risk stratifications according to the HAS-BLED score(χ2=108.57, P<0.0001).

CONCLUSIONS The HAS-BLED score not only performs better than the HEMORR,HAGES and ATRIA bleeding scores, but also is superior to the CHADS2 and CHA2DS2-VASc stroke scores for bleeding prediction. The HAS-BLED score should be the optimal choice to assess major bleeding risk in clinical practice.

GW26-e4379
Left Atrial Pressure Predicts Atrial Fibrillation Recurrence after Catheter Ablation
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OBJECTIVES An elevated left atrial pressure (LAP), a sign of atrial structural remodeling, has been reported as a mechanism of atrial fibrillation (AF). However, the effect of LAP on the recurrence after AF catheter ablation has not been well elucidated. We aimed to address the predictive value of LAP and observe the influence for prognosis.

METHODS 150 patients of AF who underwent a first-time catheter ablation in our hospital were enrolled in the present study. Including paroxysmal AF (n=66) and persistent AF (n=84). All patients underwent transseptal puncture during procedure. LAP were measured during sinus rhythm. According to the values of LAP, the patients were divided into each two groups, high LAP ofparoxysmal AF group (HP-PAF) and low LAP ofparoxysmal AF group (LP-PAF), high LAP ofpersistent AF group (HP-PeAF) and low LAP of persistent AF group (LP-PeAF). The relationship between LAP and clinical variables were analyzed. Recurrence rates of the each two groups were evaluated through follow-up. Cox-regression analysis was implemented to find out the independent determinants of AF/AT recurrence after FRCA.

RESULTS 150 AF patients were successfully followed up in the study. Follow-up lasting up 10(4.5) months. 17 patients (11.3%) in HP-PAF group and 29 patients (87.9%) in LP-PAF group maintained sinus after FRCA (P<0.01). 15 patients (33.3%) in HP-PeAF group and 33 patients (56.6%) in LP-PeAF group maintained sinus rhythm after FRCA (P<0.01).

1. For paroxysmal AF, LAP, LVEF (linear regression coefficient B=−0.261, P=0.002) was a good noninvasive parameter independently associated with LAP. For persistent AF, duration of AF (B=0.826, P=0.001), CHADS2-VASc score (B=2.327, P=0.001), LAIV (B=−0.424, P=0.001), IVS (B=−0.847, P=0.001), E/e’ (B=−3.330, P=0.001), LVEF (B=−0.651, P=0.001) were good noninvasive parameters independently associated with LAP-PeAF.

2. For paroxysmal AF, Cox-regression analysis revealed that LAP (OR 1.27; 95%CI 1.11-1.45; P<0.01) was the independent predictor of recurrence after FRCA. The area under ROC curve of LAP was 0.626. The cutoff point was 16.75mmHg (sensitivity 72.6%, specificity 82.2%). For persistent AF, LAP (OR 1.56;95%CI 1.11-1.82; P=0.019) was also the independent predictor of AF/AT recurrence after FRCA. The area under ROC curve of LAP was 0.836. The cutoff points were 17.3mmHg (sensitivity 83.3%, specificity 88.6%). In addition, duration of AF, the antero-posterioratrial diameter of left atrium and LVEF were also the independent predictors of AF/AT recurrence after FRCA. And the predictive value of LAP was higher than that of others.

CONCLUSIONS 1) Elevated left atrial pressure (LAP), a sign of atrial structural remodeling, has been reported as a mechanism of atrial fibrillation (AF). However, the effect of LAP on the recurrence after AF catheter ablation has not been well elucidated. We aimed to address the predictive value of LAP and observe the influence for prognosis.

2) For paroxysmal AF, LAP, LVEF was a good noninvasive parameter independently associated with LAP. For persistent AF, duration of AF, CHADS2-VASc score, LAIV, IVS E/e’, LVEF were good noninvasive parameters independently associated with LAP-PeAF.

GW26-e1315
Study on Coronary Vein Anatomy of Patients with Dilated Heart
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OBJECTIVES We will analyze the coronary venous system anatomy through coronary vein direct enhancement and inverse development. The conclusion will be used to confirm electrophysiological examination, radio frequency ablation, implantation of a LV lead and so on.