Maier estimates of the recurrence-free ratio revealed that MSD greater than 20 ms predicted higher risk of recurrent VT/VF. This estimate was superior to that according to LVEF. In conclusion, the increased VFCL variability, which was evaluated as MSD and CVFF, predicted high incidence of arrhythmia recurrence.

Conclusions: There is a substantial difference in heterogeneity of repolarization between men and women. In both sexes the irregularity is greatest during morning hours which is in concordance with the peak in arrhythmic risk.

1091-117A Evidence Against the Efficacy of Current Chest Wall Protection for Sudden Death Due to Precordial Blows

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Background: Blunt nonpenetrating chest blows causing sudden cardiac death (commotio cordis) continue to be reported in association with organized/recreational competitive sports, usually in healthy young children. These events have raised consideration of whether protective equipment could possibly prevent such catastrophes.

Methods: US Commissary Corps Registry of 124 confirmed cases were surveyed.

Results: Of the 124 events, 105 were associated with various sporting activities, and 25 of these (24%) occurred in young athletes (mean age 14 ± 8; all male) who were equipped playing with standard, commercially available gear regarded as providing a large measure of protection from the consequences of blows to the chest wall: 1) chest wall barriers with padding comprised largely of closed or open-cell polymer foam covered by fabric or hard shell, in hockey (n = 12), football (n = 5), lacrosse (n = 3) and baseball (n = 2) and 2) baseball projectiles marketed commercially as reduced injury "safety", or "training" balls comprised largely of rubber of various texture, in 3 children without chest barriers. In hockey (non-goalie) the puck appeared to strike the chest wall directly, either due to the angulation of the shot which circumvented the standard shoulder/chest protector, or because the player instinctively raised his arms to obstruct a slap-shot, causing the chest barrier to migrate cephalad and allowing the puck to impact unprotected precordium. In 7 of the 25 equipped athletes (3 lacrosse goalies, 2 baseball catchers, 2 hockey goalies), all with standard design chest protectors, the projectile which was judged to have struck the chest barrier directly, but nevertheless resulted in the commotio cordis event.

Conclusion: Many commercially available chest barriers or safety projectiles do not provide absolute protection from sudden death due to commotio cordis. These tragic events, primarily in young children, underline the importance of developing preventive strategies by designing more effective equipment to provide a higher level of protection from ventricular fibrillation following a precordial blow.

1091-118B Purkinje Network is the Origin of the Beasts in Catecholaminergic Bidirectional Ventricular Tachycardia and in the Initiating Beat of Short Coupling Variant of Torsade de Pointes

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Background: Catecholaminergic Bidirectional Ventricular Tachycardia (CBVT) and Short-Coupled Variant of Torsade de Pointes (SCVP) cause syncope and Sudden Cardiac Death (SCD). Methods: This study evaluated the origin of the beats initiating and perpetuating tacharyrythmias in 8 patients (pts) with CBVT (Group 1) and in 3 pts with SCVP (Group 2). DNA analysis was performed in 6 out of 11 pts. Results: The most prevalent mutation was in the Cardiac Ryanodine Receptor Gene (RYR2) in 5 out of 6 CBVT pts. In the SCVP group a mutation in the cardiomyopathy channel (CACNA1C) was identified in 2 out of 3 pts. Conclusion: Catecholaminergic CBVT is the origin of 70% of the tacharyrythmias in 6 out of 11 pts, whereas in the SCVP group the most prevalent mutation was in the CACNA1C gene.

1091-119A Ventricular Gradient is More Homogeneous in Women Than Men

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There are sex differences in the incidence of torsades de pointes and sudden cardiac death. Since heterogeneity of ventricular repolarization is linked to arrhythmogenesis, we investigated repolarization homogeneity and its circadian pattern in men and women.

Methods: 24-hour 12-lead digital ECGs (SEER MC, Marquette GE) were recorded 4 times in each of 46 healthy subjects (22 male aged 26.7±3.4, 24 female aged 27.3±8.1 years), repeated recordings were obtained 1 day, 1 week and 1 month after the first record. One 12-lead ECG was obtained every 30 seconds. An optimised version of ventricular gradient (Cosine between spatial QRS and T vectors, TCRT) was calculated in each second ECG sample. TCRT values were averaged over 10 minute time-bands from 00:00 to 24:00 hours. High values of TCRT correspond to low repolarization heterogeneity.

Results: Over the entire 24 hours women showed significantly higher TCRT values than men (p<0.000001). There was no significant sex difference in the extent of the circadian pattern. Both males and females show highest TCRT values (greatest homogeneity of repolarization) during the night and a steep increase in heterogeneity in the morning. This pattern as well as the substantial sex difference proved highly reproducible over the repeated recordings.

1091-118A Purkinje Network is the Origin of the Beasts in Catecholaminergic Bidirectional Ventricular Tachycardia and in the Initiating Beat of Short Coupling Variant of Torsade de Pointes

Fernando E. Cruz, Marco L. Fagundes, Carlo Napolitano, Angelo V. de Paole, Ivan G. Maio, Roberto S. Sa, Lutgarde M. Vanheusden, Luis R. Lete, Silvia G. Priori, Instituto Nacional de Cardiologia de Laranjalina, Rio de Janeiro, Brazil, Mauged Foundation University of Pavia, Pavia, Italy.

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