Section of Sports Cardiology

- ongoing science projects

Open lunch meeting- Europrevent
Stockholm 090509

Mats Börjesson, MD assoc prof
Chairman Section of Sports Cardiology
1. Registry on ICD in Sports
Rationale & Concept

• Current recommendations on sports participation with ICD\(^1-4\)
  – based on minimal data

• Preliminary data\(^5\)
  – a wide variety of physician recommendations to ICD patients

• A Multicenter, Investigator-initiated, Registry
  – US initiated (Jan 2008)
    • Steering Committee: Lampert, Cannom, Olshansky, Lawless, Saarel
  – European extension (Jul 2008)
    • European Coordinator: Hein Heidbüchel (University of Leuven, Belgium)
    • Endorsed by:
      – EACPR Section on Sports Cardiology
      – EHRA Scientific Initiative Committee

5. Lampert et al, JCE 2006
Registry on ICD in Sports
Research Plan

• Study Population
  – ICD patients, 10-60y: 880 worldwide, 150 in Europe
  – who, with or without the approval of their primary physicians, have made the decision to participate
    1. any level of competition in sports more vigorous than bowling or walking (ie, > IA) at, or
    2. in potentially dangerous sports (eg, skiing, surfing), or
    3. in vigorous recreational sports (‘auto-competitive’), i.e. ≥3h/w with the aim to improve their personal achievements

• Primary endpoints:
  – tachyarrhythmic death or externally resuscitated arrest
  – significant injury due to syncopal arrhythmia or shock.
Registry on ICD in Sports Centers EU

- **Recruiting:**
  - Leuven, BE (Heidbuchel)
  - Brussels, BE (Brugada)
  - Antwerp, BE (Huybrechts)
  - Aalst, BE (Geelen)
  - Leipzig, GE (Wetzel)
  - Madrid, ES (Lozano)
  - Barcelona, ES (Mont)
  - Rotterdam, NL (Jordaens)

- **In progress:**
  - Magdeburg, GE (Götte)
  - Frankfurt, GE (Israel/Hohnloser)
  - München, GE (Hoffmann)
  - Rome, IT (Tondo)
  - Mestre/Venice, IT (Giada)
  - Conegliano, IT (Delise)
  - Rome, IT (Calo)
  - Oslo, NO (Solberg)
  - Oslo, NO (Anfinsen)
  - Trondheim, NO (Hegrenes)
  - Saint-Denis, FR (Piot)
  - Rennes, FR (Carré)
  - Toulouse, FR (Boveda)
    - (Rasmussen)
  - Tel Aviv, IS (Yahalom)
  - Maastricht, NL (Broers/Opstal)
  - Leiden, NL (Schalij)
  - Arlon, BE (Mairesse)
  - Zurich, CH (Duru)
  - Lodz, PO (Chudzik)
  - Southampton, UK (Morgan)
  - Uppsala, SE (Blomström)
  - Valencia, ES (Quesada)
  - Barcelona, ES (Moya)
  - Bratislava, SK (Hatala)
  - Prague, CZ (Kautzner)
  - Copenhagen, DK

- **March 30, 2009:**
  - $n=18$
2. Arena Study - Background

• No existing European recommendations on acute cardiovascular care at sports events

• Presumed highly different situation across Europe regarding arena safety

• Primary aim: To study current situation for Cardiovascular care at top European clubs/arenas
• Secondary aim: Approximate the incidence of SCA in one season in Europe

• Method: survey of top European clubs (venues)
Survey questions

- Medical action plans available?  Written form?
- Equipment: Defibrillators available?
- Treatment facilities?
- Communication systems?
- Transportation, distance to nearest hospital
- Personnel, training
- No of cardiac arrest at arena in 1 year (no of spectators known)
Participating arenas/clubs

- France, n=29
- England, 39
- Netherland, 25
- Norway, 14
- Sweden, 21
- Serbia, 9
- Greece, 16
- Spain, 24
- Austria, 8
- Italy, 5

Total: 190 (187 arenas)
Summary

- This is the first study of the level of cardiovascular care at major sports arenas in Europe.

- The level of care varies greatly, necessitating actions to optimize cardiovascular safety in this setting.

- Recommendations for cardiovascular safety at arenas is a task now started by the Section of Sports Cardiology.
3. Position Stand: ECG interpretation in athletes

INTERPRETATION OF 12-LEAD ELECTROCARDIOGRAM IN THE ATHLETE

Domenico Corrado, MD, PhD (Chair); Antonio Pelliccia, MD (Co-Chair); Hein Heidbuchel, MD, PhD; Sanjay Sharma, MD, PhD; Alessandro Biffi, MD; Pietro Delise, MD; Cristina Basso, MD; Aris Anastassakis, M.D.; Mats Borjesson, MD, PhD; Hans Halvor Bjørnstad, M.D; François Carrè, M.D; Asterios Deligiannis, Dorian Dugmore, M.D.; M.D.; Erik Solberg, M.D., Klaus P. Mellwig, MD, Nicole Panhuyzen-Goedkoop, M.D; Gianfranco Buja, MD; William J McKenna, MD

On behalf of the Sections of Sports Cardiology of the European Association of Cardiovascular Prevention and Rehabilitation; and the Working Group of Myocardial and Pericardial Disease of the European Society of Cardiology

International experts who contributed to and revised parts of this paper:
Ricardo Stein, M.D., Gaetano Thiene, M.D.; NA Mark Estes III, MD; Peter Schwartz, M.D.; Barry J Maron, MD; Paul Thompson, M.D.; Paolo Zeppilli, M.D. Ihor Gussac, MD, PhD; Jonathan Drezner, M.D.; Peidro Roberto, MD; Mark Link, MD, PhD
Table 1. Classification of abnormalities of the athlete’s ECG.

<table>
<thead>
<tr>
<th>Common and training-related ECG changes</th>
<th>Uncommon and training-unrelated ECG changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sinus bradycardia;</td>
<td>• T-wave inversion;</td>
</tr>
<tr>
<td>• First degree AV block;</td>
<td>• ST-segment depression;</td>
</tr>
<tr>
<td>• Incomplete RBBB ;</td>
<td>• Pathological Q waves;</td>
</tr>
<tr>
<td>• Early repolarization;</td>
<td>• Left atrial enlargement;</td>
</tr>
<tr>
<td>• Isolated QRS voltage criteria for left ventricular hypertrophy</td>
<td>• Left axis deviation/left anterior hemiblock;</td>
</tr>
<tr>
<td></td>
<td>• Right axis deviation/left posterior hemiblock;</td>
</tr>
<tr>
<td></td>
<td>• Right ventricular hypertrophy;</td>
</tr>
<tr>
<td></td>
<td>• Ventricular pre-excitation;</td>
</tr>
<tr>
<td></td>
<td>• Complete LBBB or /RBBB;</td>
</tr>
<tr>
<td></td>
<td>• Long or short QT interval;</td>
</tr>
<tr>
<td></td>
<td>• Brugada-like early repolarization</td>
</tr>
</tbody>
</table>

RBBB=Right bundle branch block; LBBB=Left bundle branch block.