ESC CONGRESS HIGHLIGHTS

IMAGING

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Thanks to V. DELGADO (Leiden, NL)
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Impact on decision making
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- Biering-Sørensen (US) «Impact of Echo»
CORONARY ARTERY DISEASE
Prognostic implications of stress-CMR vs. MPS and NICE guidelines in patients with suspected CAD

**Design:**
- N=1,202 patients
  - 3T CMR stress guided care vs. current best clinical practice

**Hypothesis:**
**Stress CMR-guided management** of patients with suspected CAD is superior to current best clinical practice*
- avoiding unnecessary coronary angiography
- patient outcome

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**CE-MARC2**

1,202 Patients Recruited

- N=481
  - 3T-CMR Guided Management
- N=481
  - SPECT Guided Management
- N=240
  - NICE Guidelines-based Management

Angiogram required based on imaging strategy or non-invasive test result?

- NO
  - Optimal Medical Therapy
- YES
  - Angiography and normal FFR (>0.8)

- NO
  - Revascularize (PCI or CBAG)
- YES
  - Primary EP: Unnecessary angiography

6, 12, 24 & 36 month follow-up.
Secondary Endpoints: MACE, QoL & Health Economic Analysis

*J. Greenwood (Leeds, UK), FP 4154*
CE-MARC 2: results

Adjusted OR of unnecessary ICA

CMR vs. NICE 0.19 (95% CI 0.12-0.30)
CMR vs. SPECT 0.87 (95% CI 0.55-1.37)

CMR vs. NICE 1.37 (95% CI 0.52-3.57)
CMR vs. SPECT 1.06 (95% CI 0.51-2.17)

Adjusted HR for MACE

CMR vs. NICE 1.37 (95% CI 0.52-3.57)
P=0.52
CMR vs. MPS 0.95 (0.46, 1.95)
P=0.88

J. Greenwood (Leeds, UK), FP 4154
Coronary CTA for selective ICA: effect on cardiovascular outcomes, cost-effectiveness and quality of life

- **Design:**
  - N=1,500 patients

- **Hypothesis:**
  - CCTA–guided management compared to ICA:
    - Non-inferior for MACE
    - Serious test-related complications
    - Cost
CONSERVE: results

**MACE**

Median follow-up period: 12.3 months (IQR, 11.7 - 13.2 months)

<table>
<thead>
<tr>
<th>Referral Type</th>
<th>Direct ICA</th>
<th>Selective ICA</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICA (Index + Downstream)</td>
<td>1.02</td>
<td>0.22</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>-78% reduction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revascularization</td>
<td>0.17</td>
<td>0.10</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>-41% reduction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-invasive testing (Index + Downstream)</td>
<td>0.15</td>
<td>1.17</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Non-invasive testing (Downstream)</td>
<td>0.15</td>
<td>0.17</td>
<td>0.27</td>
</tr>
<tr>
<td>CV hospitalizations</td>
<td>0.04</td>
<td>0.04</td>
<td>0.95</td>
</tr>
<tr>
<td>Outpatient visits</td>
<td>3.04</td>
<td>2.82</td>
<td>0.018</td>
</tr>
<tr>
<td>Cardiovascular Costs* (USD)</td>
<td>6,740</td>
<td>3,338</td>
<td>&lt;0.001</td>
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<tr>
<td>-50% reduction</td>
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</tbody>
</table>

H. J. Chang (Seoul, KR), FP 4148
FUSION IMAGING
PET/MRI for multiterritorial evaluation of subclinical atherosclerosis

- **Design:**
  - $N = 938$ asymptomatic patients

- **Hypothesis:**
  - To assess the feasibility and reproducibility of hybrid 18F-FDG PET/MRI to characterize plaque burden, composition and inflammation in multiterritorial evaluation of subclinical atherosclerosis
○ **Feasibility:** Analysis of 18F-FDG PET/MRI was feasible in 842 (89.7%) studies (5.9% of which were incomplete, mainly lacking carotid imaging).

○ **Reproducibility:**

![Diagrams showing reproducibility](image-url)
Long-term prognostic value of hybrid CTCA/SPECT

- **375 patients**
  - **N = 216** → Normal finding by CCTA and SPECT-MPI
  - **N = 113** → Unmatched CCTA and SPECT-MPI
  - **N = 46** → Stenosis by CCTA and matching reversible perfusion defect by SPECT-MPI
During a median follow-up of 6.8 years, 45 patients died, there were 19 myocardial infarctions and 160 MACE.
Complementary role of echocardiography and CMR in the management of patients admitted to cardiology

N = 231 patients
CMR had a significant clinical impact:

- completely new diagnosis in 27% of patients
- change in management in 31%
- new diagnosis and a change in management in 10% of patients
Global LV longitudinal strain as a predictor of atrial tachyarrhythmias in HFREF

- AF is associated with increased mortality in HFrEF patients
- LV systolic and diastolic dysfunction may lead LA remodeling
- Can global LV longitudinal strain predict the risk of AT in HFrEF?
Global LV longitudinal strain as a predictor of atrial tachyarrhythmias in HFREF

- Of 1820 patients enrolled in MADIT-CRT, speckle tracking echocardiography at 1 year follow-up was feasible in 807 patients.
- After a median follow-up of 2.2 years, 43 (5%) AT events

### Incidence Rate (per 100 patients years)

- **Whole cohort (CRT+ICD) (n=807)**

<table>
<thead>
<tr>
<th>GLS at 12-months after device implantation (%)</th>
<th>Incidence Rate (per 100 patients years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20</td>
<td>2</td>
</tr>
<tr>
<td>-15</td>
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<tr>
<td>-10</td>
<td>6</td>
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<tr>
<td>-5</td>
<td>8</td>
</tr>
<tr>
<td>0</td>
<td>10</td>
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</tbody>
</table>

- **HR 1.11 (1.00, 1.22), p=0.041**

*Image credits: Biering-Sørensen (Boston, US) 1892*
Non-invasive imaging for evaluation of patients with suspected CAD results in lower rates of ICA without stenosis, lower cost and similar prognosis than direct ICA approach.

Fusion imaging is promising.

CMR and advanced echocardiographic techniques may impact decision making in patients with heart disease.