La rivascolarizzazione miocardica nella disfunzione ventricolare sinistra (dopo lo studio STICH) è inutile

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Distribution of angina and dyspnea in the patients submitted to medical or medical and surgical treatment

Canadian classification

NYHA class

Velazquez et al N Engl J Med 2011;364;17:1607
Coronary-Artery Bypass Surgery in Patients with Left Ventricular Dysfunction

Intention to treat (ITT):
Overall cross over:
Med to CABG:
100/602 (17%)

CABG to Med:
57/610 (9%)

Velazquez et al N Engl J Med 2011;364;17:1607
Coronary-Artery Bypass Surgery in Patients with Left Ventricular Dysfunction

Per treatment analysis

Per protocol analysis

Velazquez et al N Engl J Med 2011;364;17:1607
15-year cumulative survival estimates in patients with critical LM and RCA stenosis stratified by left ventricular function: the CASS registry

Normal LV function

Mild LV dysfunction

Moderate LV dysfunction

Severe LV dysfunction

Myocardial Viability and Survival in Ischemic Left Ventricular Dysfunction

A) Without Myocardial Viability
- Medical therapy (33 deaths)
- CABG (25 deaths)

B) With Myocardial Viability
- Medical therapy (95 deaths)
- CABG (83 deaths)

<table>
<thead>
<tr>
<th>Years since Randomization</th>
<th>No. at Risk</th>
<th>Medical therapy</th>
<th>CABG</th>
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<table>
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<tr>
<th>Years since Randomization</th>
<th>No. at Risk</th>
<th>Medical therapy</th>
<th>CABG</th>
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</tbody>
</table>

Myocardial Viability and Survival in Ischemic Left Ventricular Dysfunction

Intention to treat (ITT):
Overall cross over:
Med to CABG:
31/303 (10.2%)

CABG to Med:
19/298 (6.4%)

Cumulative event-free survival

Myocardial Viability and Survival in Ischemic Left Ventricular Dysfunction

Treatment effectively received

Uncertainties about STICH: some personal comments

1. Methodological issues

Viability imaging available only for 50% of enrolled patients
Differences in patients evaluated before and after enrollment point

Decision on test performance at discretion of each investigator

Viability data available before randomization in 170/601 (29%): Pre-selection bias

Viability two different criteria:
% of whole LV myocardium (TI)
% of dysfunctioning myocardium (DSE) 0-1V: 3V or LM (?):

Merged with a complex population
MED: 87 (29%)  216 (71%)
CABG: 77 (26%)  221 (74%)

No data about degree of revascularization
Exclusion of LM and severe angina,

**BUT inclusion of anginal patients**
Myocardial Viability and Survival in Ischemic Left Ventricular Dysfunction

... We also did not incorporate other approaches, such as positron-emission tomography (PET)\textsuperscript{36,37} or contrast-enhanced magnetic resonance imaging (MRI).\textsuperscript{38,39} However, in a meta-analysis and other reviews, SPECT and dobutamine echocardiography have been found to have similar prognostic potential to that of PET,\textsuperscript{8,40,41} and there are limited data regarding outcomes in patients with chronic ischemic left ventricular dysfunction who were studied on MRI.

All of these analyses aimed to verify the accuracy of TI, PET MRI or PET in predicting contractile recovery after revascularization.
Mismatch segment

*End-diastole*  
Baseline function

*End-systole*  
Rest MBF  
Deoxyglucose

*Dobutamine function*  
Dobutamine MBF

Progressive changes in tissue structure and myocardial phenotype in hibernation

<table>
<thead>
<tr>
<th>Ultrastructure</th>
<th>Collagen disposition</th>
<th>Myosin mRNA expression</th>
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<tbody>
<tr>
<td>Normal</td>
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<tr>
<td>Mild (stage 1)</td>
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<td>Moderate (stage 2)</td>
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<tr>
<td>Severe (stage 3)</td>
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</tbody>
</table>

Elsaesser et al. Circulation 1997;96:2920
Functional recovery after CABG in patients with LV dysfunction: What is its relevance?

Group A: 68 pts
LVEF: 0.24±0.05
CABG: 0.39±0.1

Group B: 36 pts
LVEF: 0.24±0.05
CABG: 0.23±0.06

Samady et al Circulation. 1999;100:1298
The scanty relationship between viability and functional recovery: a slow recovery or a fast impairment????

Group 1: 40 pts, CABG <1mo after DSE
Group 2: 45 pts, CABG >1 mo after DSE

Bax et al; Circulation. 2003;108:II-39
Viability and impact of revascularization on prognosis: A meta-analysis

Allman et al J Am Coll Cardiol 2002;39:1151
Propensity-matched patients undergoing PET viability testing (306/765) at the Cleveland Clinic

Number at Risk:
No Intervention 153
Intervention 153

<table>
<thead>
<tr>
<th>Years after PET/FDG</th>
<th>125</th>
<th>85</th>
<th>58</th>
<th>38</th>
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<tr>
<td>No Intervention</td>
<td>135</td>
<td>92</td>
<td>75</td>
<td>41</td>
<td>16</td>
</tr>
</tbody>
</table>

Contrast Cardiac MRI

Kwong RY, Circulation 2006;113:2733-2743
Conclusions

Prospective randomized studies on the optimal treatment of IHD patients with LV dysfunction are difficult to perform.

Viability study might be not needed in a significant fraction of patients candidates to surgery especially if:
1. They are symptomatic for angina
2. LV dysfunction is extremely severe

An accurate evaluation of underlying hypothesis should precede the selection of any given test in determining the indication to a revascularization regimen.
Grazie