STATIN IN CARDIAC SURGERY

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STATINS & Cardiac Risk

Preoperative Investigations

<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
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<tbody>
<tr>
<td>A-ESS</td>
<td>88</td>
<td>74 (56-90)</td>
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<tr>
<td>E-ESS</td>
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<td>MRA</td>
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<td>DCE</td>
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<td>2E</td>
<td>88</td>
<td>74 (56-90)</td>
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*Indicates confidence interval.

Facts

- The most common Cardiac Disease is IHD
- Cardiac Disease being the single most common cause of death
- Mortality & Morbidity rates increases when subjecting such patients to higher risks without being protected
- The term primary prevention refers to interventions that aim to prevent cardiovascular events in people who have no clinical evidence of cardiac disease

Different Risk Indices

- Electrocardiogram
- Chest X-ray
- Laboratory tests (e.g., blood tests)
- Medical history
- Age
- Type of surgery
ACC/AHA Guidelines
Cardiac Risk

➢ Clinical Predictors (Disease Status)
➢ Functional Capacity (Exercise Tolerance)
➢ Surgical Risk (Site & Intervention)

Revised Cardiac Risk Index
(RCRI)

➢ CAD
➢ Cerebro-vascular Accidents
➢ Renal Impairment
➢ DM
➢ High Risk Surgery

Strategies of Cardioprotection

Pharmacological management aiming
1- Reduce ischemic–reperfusion injury
2- Ischemic preconditioning

AGENTS that share both effects are the
NITRIC OXIDE releasing agents

Risk Reduction Strategies
I. Perioperative Management
   a. Anesthetic techniques
      1. General versus regional anesthesia
      2. Invasive monitoring – PAC, TEE
   b. Surgical approach
      1. Laparoscopic
      2. Endovascular procedures
II. Medical Management
    a. Beta blockers
    b. Anti-ischemic medications
III. PCI

General Effects of Statins

Lipid-lowering properties
Pleiotropic effects that include:
➢ Anti-inflammatory effects
➢ Improved endothelial function
➢ Plaque-stabilizing actions
➢ Antioxidant effects
Peri-operative Cardiac Medications

- Anti-ischemic
- Anti-arrhythmic
- Anti-failure
- Anti-platelets
- Anti-coagulants
- Anti-hypertensive
- Anti-diabetics

But where are the STATINS Form our scope of interest

Specific Vascular Effects

Modulate Vascular Function
- Increasing expression of nitric oxide synthetase
- Enhancing nitric oxide production.
- Increases in nitric oxide reduce endothelial dysfunction
- Attenuate leukocyte-endothelium interactions
- Decrease platelet aggregation.

Market Brands

Five statins currently have a marketing authorisation:

- Atorvastatin
- Fluvastatin
- Pravastatin
- Rosuvastatin
- Simvastatin

When to Start

Evidence Based Literature

Shows that long-term administration gives better results than short term (< 30 days) or immediate preoperative use.

A meta-analysis of all placebo-controlled trials
(primary and secondary prevention studies)
published data indicated that therapy with a statin was associated with a statistically significant reduction in risk of all-cause mortality.
DOSING

Atorvastatin & Simvastatin
available as 10-mg, 20-mg, 40-mg and 80-mg tabs.
starting dosage is 10 mg/day, increased at intervals of at
least 4 weeks. The maximum dosage is 80 mg/day.

Home Message

With the increasing population of CAD &
With the increasing population of Diabetics and
resultant vasculopathies

We have to stress upon any agent that will
modulate and protect vascular
endothelium to reduce the risk over our
cardiac patients