Early use of statins in Acute Coronary Syndrome (ACS)

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Case Study

Introduction

Acute coronary syndrome (ACS) includes acute myocardial infarction (MI) and unstable angina. Following an ACS, the chances of recurrent coronary events are higher than that of a stable coronary disease. The burden of ACS in India is one of the highest in the world. A study called CREATE, involving 20,937 patients, suggested that Indian patients with ACS have a higher rate of STEMI than patients in the developed countries. The efficacy of statin therapy in prevention of CVS mortality and morbidity has already been established. In fact, the ACC/AHA Joint Task Force recommends the statins to be prescribed to patients in the developed countries. The efficacy of statin therapy in prevention of CVS mortality and morbidity has already been established. In fact, the ACC/AHA Joint Task Force recommends the statins to be prescribed to patients in the developed countries.

Case presentation

In emergency department

A 70-year-old woman (5’3” tall, weighing 60 kg) was brought to the emergency department by her family, when she woke up at around 3.30 am with her heart pounding, severe chest tightness, and inability to breath. The family reported that she was experiencing mild chest tightness and fatigue for the last 5-6 days. In initial examination, she had a heart rate (HR) of 100 bpm, blood pressure (BP) was 165/85 mmHg, and an oxygen saturation of 89%. She was given two sublingual nitroglycerin tablets immediately and was placed on 4LNC (4 liters of oxygen via nasal cannula). Her chest tightness was found to be relieving, HR was stable at 90 bpm, and O2 saturation on 4LNC was 95%.

The ECG showed 1-mm ST-depression in anterior lead. There was mild interstitial edema found in chest X-ray. The value of troponin T was found to be 2.1 µg/L and serum creatinine was 1 mg/dL. She was then admitted to the department of cardiology.

In department of cardiology

Echocardiography confirmed an LVEF of 50% with mild hypertrophy and anterior wall hypokinesia. Following the protocol for the treatment of NSTE-AMI, she was started on with clopidogrel, aspirin, and unfractionated heparin. Rosuvastatin 40 mg was suggested to be added to the therapy after 48 hrs, complying with ACC/AHA recommendations. In the next morning, when she reported she had another episode of chest tightness, it was decided to perform a cardiac catheterization. The cardiac catheterization showed a 90% lesion in the mid-LAD, and a metal stent was deployed in the LAD. She was continued with protocolized medication along with 40 mg rosuvastatin till discharge.

At discharge, she was prescribed with a medication regimen of low dose aspirin and clopidogrel, and rosuvastatin 40 mg for 16 weeks. On the day of discharge, she was doing quite well with a BP of 125/70 mmHg, HR of 68 bpm, and a favorable lipid profile with LDL-C 76 mg/dL. She was counselled for lifestyle modification and dietary therapy as per the recommendations made in the 2011 update of guidelines for AHA/ACC Secondary Prevention and Risk Reduction Therapy for Patients with Coronary and Other Atherosclerotic Vascular Disease.

On follow-up

On two months follow up, she was doing fine with a stable BP and lipid profile. After four months, she had not experienced any chest pain or breathing difficulties that had led her to visit the hospital.

Discussion

Following an episode of ACS, older people have more chances to develop a diabetic heart failure, as was case here. Considering her age, the decision of PCI was taken after thorough discussion with her and her family. In troponin positive patients an early invasive approach is beneficial, according to the TACTICS TIMI 18 study.

Early use of the statins following an episode of ACS is becoming well-accepted now. The ACC/AHA recommendation on the same is mainly based on two clinical trials: the MIRACL and PROVE-IT. In the MIRACL trial, patients (n = 3086) with unstable angina were administered with atorvastatin 80 mg/day or placebo within 4 days of the event. 16% risk reduction was seen the groups treated with the statins. In PROVE-IT, 4162 patients, hospitalized with an ACS within 10 days were enrolled. They were randomized to receive either atorvastatin 80 mg/day or pravastatin 40 mg/day for a mean of 24 months. The results showed a 16% relative risk reduction, highlighting the efficacy of statins in ACS patients. In a comparative study by White, rosuvastatin was shown to have superior LDL-C reductions than atorvastatin, simvastatin and pravastatin, when used in an equivalent dosage regimen. It is the most effective statin at increasing HDL-C and has a positive effect on apolipoprotein and lipid ratios. This is the rationale behind selecting rosuvastatin as the lipid-lowering agent in this case.

According to the AHA/ACC guidelines (2011 update) for secondary prevention, all patients should be counseled regarding the need for lifestyle modification (weight control, sodium reduction, physical activity etc.) to achieve and maintain the lipid goal (LDL-C <100 mg/dL; and <70 mg/dL for high-risk patients). In addition to lifestyle modification and dietary therapy, this guidelines also recommends initiation and continuation of statin therapy before discharge.

Conclusion

The efficacy of lipid-lowering therapy before hospital discharge to prevent recurrent coronary event following an ACS is well established in clinical literature. In a country like India, where the prevalence of ACS is so high, statins (like rosuvastatin, atorvastatin and so on) can be more aggressively employed for this purpose.

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Case presentation
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A 70-year-old woman (5′3″ tall, weighing 60 kg) was brought to the emergency department by her family, when she woke up at around 3.30 am with her heart pounding, severe chest tightness, and inability to breath. The family reported that she was experiencing mild chest tightness and fatigue for the last 5–6 days. In initial examination, she had a heart rate (HR) of 100 bpm, blood pressure (BP) was 165/85 mmHg, and an oxygen saturation of 89%. She was given two sublingual nitroglycerin tablets immediately and was placed on 4LNC (4 liters of oxygen via nasal cannula). Her chest tightness was found to be relieving, HR was stable at 90 bpm, and O2 saturation on 4LNC was 95%.

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Early use of the statins following an episode of ACS is becoming well-accepted now. The ACC/AHA recommendation on the same is mainly based on two clinical trials: the MIRACL4 and PROVE-IT.5 In the MIRACL trial, patients (n = 3068) with unstable angina were administered with atorvastatin 80 mg/day or placebo within 4 days of the event. 16% risk reduction was seen the groups treated with the statin.6 In PROVE-IT, 4162 patients, hospitalized with an ACS within 10 days were enrolled. They were randomized to receive either atorvastatin 80 mg/day or pravastatin 40 mg/day for a mean of 24 months. The results showed a 16% relative risk reduction, highlighting the efficacy of statins in ACS patients. In a comparative study by White7, rosuvastatin was shown to have superior LDL-C reductions than atorvastatin, simvastatin and pravastatin, when used in an equivalent dosage regimen. In the most effective statin at increasing HDL-C and has a positive effect on apolipoprotein and lipid ratios. This is the rationale behind selecting rosuvastatin as the lipid-lowering agent in this case.

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References

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