

# A Rare Case of Evolocumab Induced Atrial Fibrillation

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## INTRODUCTION:

Evolocumab, a proprotein convertase subtilisin/kexin type 9 inhibitor (PCSK9i) is a novel low-density lipoprotein (LDL) lowering agent that has been recently approved by the FDA to reduce the risk of myocardial infarction, stroke, and coronary revascularization in individuals with established atherosclerotic cardiovascular disease, alone or in combination with other lipid-lowering agents, and for treatment of patients with primary hyperlipidemia including familial hypercholesterolemia. The most common adverse effects reported in clinical trials were: nasopharyngitis (6-11%), upper respiratory tract infection (URTI) (8-9%), diabetes (9%), and injection site reactions [1]. Here we report the first case – to our knowledge – of evolocumab-induced atrial fibrillation (AF).

## CASE PRESENTATION:

A 69-year-old female with a past medical history of hypertension, hyperlipidemia, and atrial fibrillation status post successful catheter ablation 2 years ago, presented with chest tightness, palpitations and lightheadedness after receiving her second evolocumab (monthly dose of 420 mg/3.5 mL) injection. She reported a similar episode with a heart rate (HR) of 230 bpm after receiving her first evolocumab injection 1 month ago due to hyperlipidemia with statin intolerance. She denied any prior episodes of atrial fibrillation since her catheter ablation. She also denied any other triggers including emotional and physical stress, heavy alcohol or caffeine drinking, or recent infections. Electrocardiogram (ECG) showed atrial fibrillation with HR 183 bpm, and T-wave inversion in the precordial leads. Troponin level was normal. Diltiazem drip was started and converted her heart rhythm to normal sinus rhythm. Patient symptoms subsided and ECG changes resolved. She was subsequently discharged on appropriate medications with a recommendation to stop evolocumab. The patient denied any recurrent episodes upon 3 months follow-up.

## DISCUSSION:

Evolocumab is a promising anti-PCSK9 monoclonal antibody that decreases the levels of LDL-C by promoting degradation of PCSK9 enzyme resulting in upregulation and recycling of LDL receptors with subsequent removal of plasma LDL-C by endocytosis. It has been recently approved by FDA after several clinical trials (OSLER, FOURIER) that showed favorable cardiovascular outcomes with a consistent safety profile

[2]. Common reported adverse reactions include nasopharyngitis, URTI, and diabetes.

Drug-induced AF is more likely to occur with advanced age, alcohol use, thyroid dysfunction, heart disease, and sleep apnea. It has been associated with cardiovascular drugs, anti-neoplastic agents, antimicrobials, and corticosteroids. Though it is likely to be a very uncommon side effect, AF was reported in the GLAGOV trial and its extension trial in 6/484 (1.24%) and 5/770 (0.65%) of the patients receiving evolocumab respectively [3]. Although the risk seems non-significant and negligible, yet, it can be life-threatening. In our report, the patient suffered from AF with rapid ventricular response upon receiving evolocumab injection twice and presented with hemodynamic instability that resolved after stopping the drug. This case highlights the significance of post-marketing surveillance, and the importance of considering the possibility that a patient's arrhythmia could be drug-induced.

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