

## Ticagrelor-Related Complete Atrioventricular Block in a Patient with Hypertrophic Cardiomyopathy

Dear Editor,

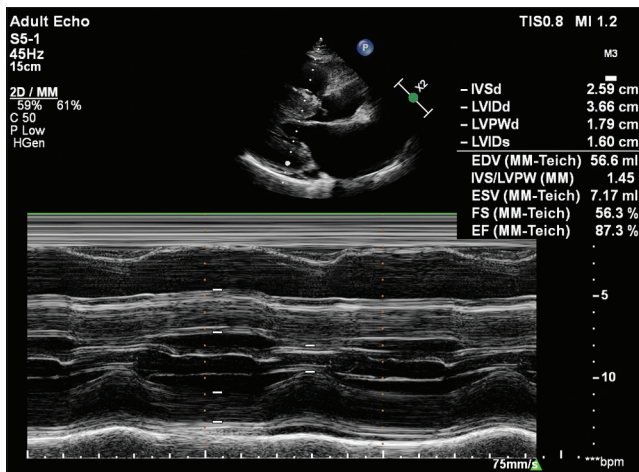
Ticagrelor is a potent, direct P2Y<sub>12</sub> receptor antagonist with rapid onset of action and intense platelet inhibition.<sup>[1]</sup> Because of this beneficial effect, ticagrelor is preferred over clopidogrel for acute coronary syndromes (ACS).<sup>[1,2]</sup> Although this drug is usually well tolerated, ticagrelor causes adverse events such as dyspnea and symptomatic/asymptomatic arrhythmias.

Herein, we report a patient with hypertrophic obstructive cardiomyopathy who developed complete atrioventricular block (AVB) with dizziness approximately 12 h after receiving a recommended loading dose (180 mg) of ticagrelor for ACS. To the best of our knowledge, this is the first case report of ticagrelor-induced complete AVB in the setting of hypertrophic cardiomyopathy. The patient gave her oral and written consent informed consent authorizing the use and disclosure of protected health information.

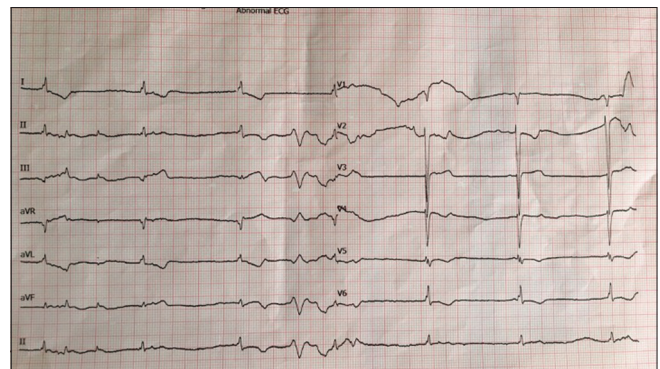
A 55-year-old female with hypertrophic obstructive cardiomyopathy was admitted to the emergency department due to typical chest pain. The patient was hemodynamically stable on admission, but on electrocardiography (ECG), there was a sinus rhythm with a heart rate of 65 bpm along with increased precordial voltages and nonspecific ST-segment and T-wave abnormalities. The cardiac troponin was high on admission. Transthoracic echocardiography showed mild left ventricular dysfunction with hypokinesis of the anterior wall and nonprovocative 50 mm gradient at left ventricular outflow tract with septum thickness 26 mm [Figure 1]. The patient was treated with 50 mg/day metoprolol succinate. With initial diagnosis of ACS, acetylsalicylic acid (300 mg), ticagrelor (a

loading dose of 180 mg and maintenance dose of 90 mg twice a day), and intravenous unfractionated heparin (10,000 IU) were administered and then coronary angiography was performed. Coronary angiogram revealed a severe single-vessel disease of the mid-left anterior descending artery which was followed by drug-eluting stent (DES) implantation, and Thrombolysis In Myocardial Infarction (TIMI) III flow was successfully obtained. After the procedure, the patient was asymptomatic and free of pain. Approximately 12 h later, short episodes (6 s) of complete AVB appeared on continuous ECG monitoring. The patient was experienced dizziness. On ECG, there was a complete AVB with 39 beats/min [Figure 2]. Since she was hemodynamically stable, we did not perform a temporary pacemaker. We stopped the beta-blocker therapy. On the next day, ticagrelor was stopped and clopidogrel was initiated instead. On the 2<sup>nd</sup> day after stopping ticagrelor, the patient was in normal sinus rhythm with no recurrences of heart block. Low-dose oral beta-blocker therapy was given and tolerated, and the patient was discharged home the following day with therapy of acetylsalicylic acid (ASA), clopidogrel, metoprolol succinate, rosuvastatin, and ramipril. After discharge, the patient was called for a follow-up visit at 1 month. She was in good clinical condition, and we did not observe any heart block or any other bradyarrhythmias in the 24-h rhythm Holter.

There have been reports suggesting that ticagrelor can have life-threatening bradyarrhythmic effects.<sup>[1-6]</sup> The exact mechanism of bradyarrhythmic effect of ticagrelor is believed to be mediated by an increase in tissue concentration of adenosine due to the inhibition of its cellular uptake by erythrocytes. After reviewing these reports, these adverse effects were evident when administering ticagrelor in patients with preexisting conduction disease or in the presence of chronic sinoatrial node or atrioventricular (AV) nodal blocking agents. Although



**Figure 1:** The parasternal long-axis view demonstrating the asymmetrical hypertrophy of the interventricular septum



**Figure 2:** Electrocardiography approximately 12 h post ticagrelor load showing complete atrioventricular block

the presented case was taking low-dose beta-blocker therapy, we believe that hypertrophic cardiomyopathy likely affects the intrinsic conduction system. Thus, besides patients with already conduction disorder or those treated with AV blocking drugs, we recommend careful observation of patients with hypertrophic cardiomyopathy during ticagrelor treatment.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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