

# Acquired Torsades de Pointes in Atrioventricular Block

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Disclosures: The authors report no conflicts of interest regarding the content herein.

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A 73-year-old female with no significant cardiac history presented for an elective right knee replacement surgery. After the right knee replacement surgery and while in the recovery room, she was noted to be bradycardic and telemetry showed a new 2:1 atrioventricular (AV) block. The patient had significant right knee pain around that time and she received a dose of oxycodone. She denied having any symptoms with new bradycardia and 2:1 AV block. She was not on any AV nodal blocking agents. She continued to remain bradycardic with her heart rate in 40s and 2:1 AV block, and was completely asymptomatic. Initially, her new 2:1 AV nodal block was thought to be pain induced, vagal in etiology. She was discharged home on a 30-day event monitor. A transthoracic echocardiogram was normal.

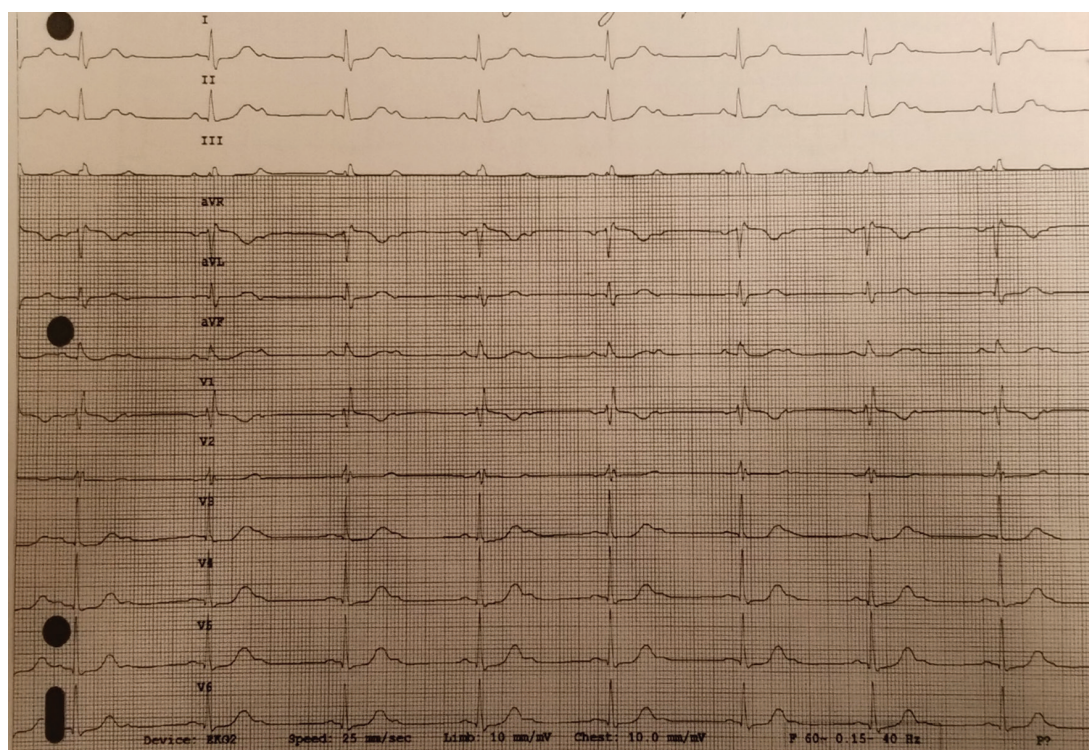
A few days after her discharge, she had an evening episode of severe dizziness and lightheadedness with presyncope, after which she was evaluated in the emergency department. She was noted to have a newly prolonged QTc interval on electrocardiogram (ECG) during evaluation in the emergency room (Figures 1-2). Review of the Holter event monitor showed the patient in sinus bradycardia, with her heart rate mostly in 40s and 2:1 AV block, resulting in a very brief episode of Torsades de pointes (TdP) that resolved spontaneously (Figures 3-4). She underwent a permanent pacemaker implantation thereafter.

TdP is an uncommon and distinctive form of polymorphic ventricular tachycardia, characterized by a gradual change in the amplitude and twisting of the QRS complexes around the isoelectric line.<sup>1</sup> Common risk factors for an episode of TdP in our patient were female gender with advanced age, bradycardia, and AV block. Very few patients with AV block develop TdP and these individuals have a longer QTc interval. It is not clear if individuals with AV block-mediated TdP may have some underlying genetic predisposition. The exact mechanism of QT interval prolongation in individuals with bradycardia-related TdP is unclear. ■

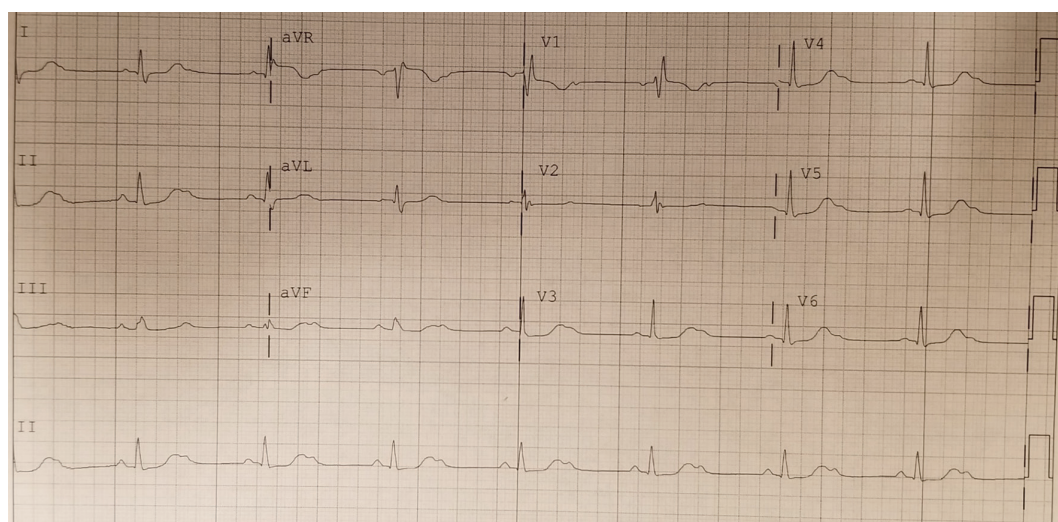
## Reference

1. Dave J. Torsade de Pointes. Theheart.org Medscape. May 6, 2022. Accessed May 16, 2022. <https://emedicine.medscape.com/article/1950863-overview>

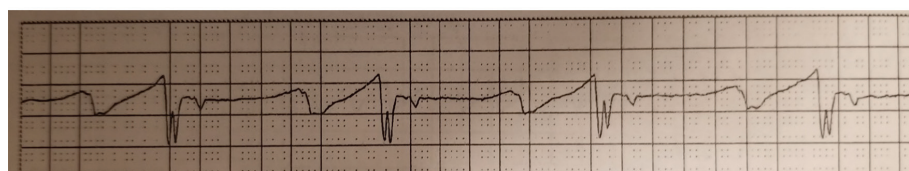
**Very few patients with AV block develop TdP and these individuals have a longer QTc interval.**



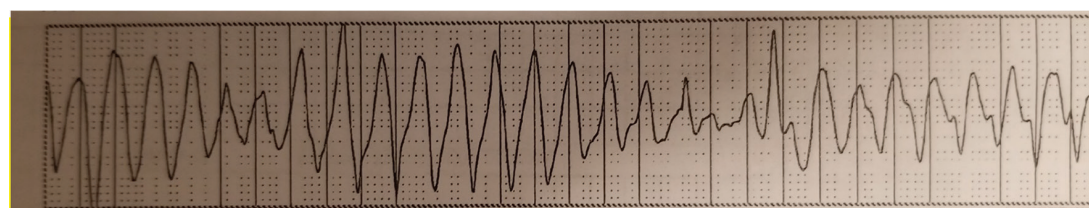
**Figure 1.** Electrocardiogram (ECG) rhythm strip showing 2:1 atrioventricular (AV) block with prolonged QTc interval.



**Figure 2.** ECG showing 2:1 AV block with prolonged QTc interval.



**Figure 3.** Holter recording in a patient with postoperative AV block and typical Torsades de pointes (TdP).



**Figure 4.** Holter recording in the same patient showing 2:1 AV block.