

## Complete heart block associated with regadenoson: A real side effect

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### INTRODUCTION

Regadenoson is used as a vasodilator agent in stress testing. It is chosen over other vasodilator agents because of ease of use, short duration of action, safety profile, efficacy, and reduced incidence of heart block when compared to adenosine. Phase 3 clinical trials reported no incidence of second- or third-degree AV block.<sup>1</sup> We report a case of third-degree AV block after receiving regadenoson.

### CASE SUMMARY

A 75-year-old female with a long-standing history of hypertension complicated by end stage renal disease on hemodialysis was being worked up for renal transplantation and a myocardial perfusion study (MPI) was requested. The patient's medications at the time of evaluation were subcutaneous insulin, metoprolol, lisinopril, nortriptyline, gabapentin, donepezil, and alendronate. The patient was also on levetiracetam because of a prior history of stroke but no history of seizures. The patient underwent a resting pharmacological MPI with regadenoson due to previous history of stroke. Her baseline ECG was normal (Figure 1). After regadenoson injection, the patient developed a second-

degree AV block (Figure 2) which progressed to a third-degree AV block (Figure 3) which was immediately reversed with aminophylline (Figure 4). The patient remained asymptomatic during the episode. The perfusion scan as well as the left ventricular function was normal.

### DISCUSSION

We performed an extensive review of animal studies and clinical trials in humans and failed to find a case of complete heart block with administration of regadenoson.<sup>1,2</sup>

The review of the Food and Drug Administration (FDA) database documents at least 8 cases of complete heart block due to regadenoson in post-marketing surveillance.<sup>3</sup> Previous cases have not described whether the patients had renal dysfunction or not. It is our observation and others that regadenoson does produce more symptoms to ESRD patients than it does to other populations.

It is impossible to predict which patient with a normal ECG will develop a complete heart block, stressing the importance of recognizing potential side effects and treating them immediately.

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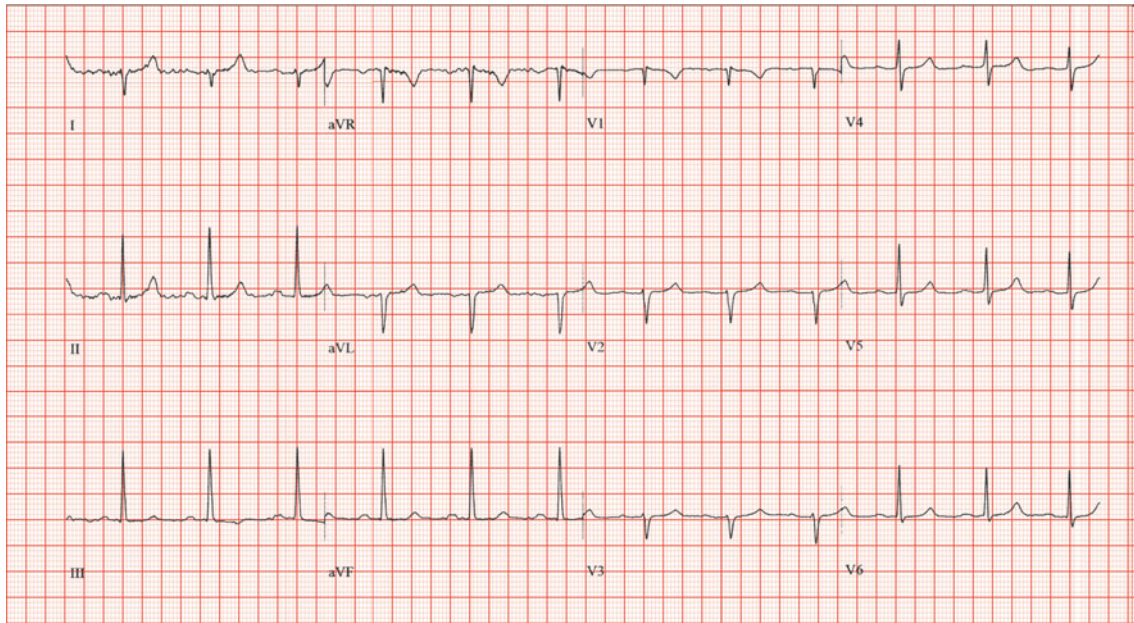
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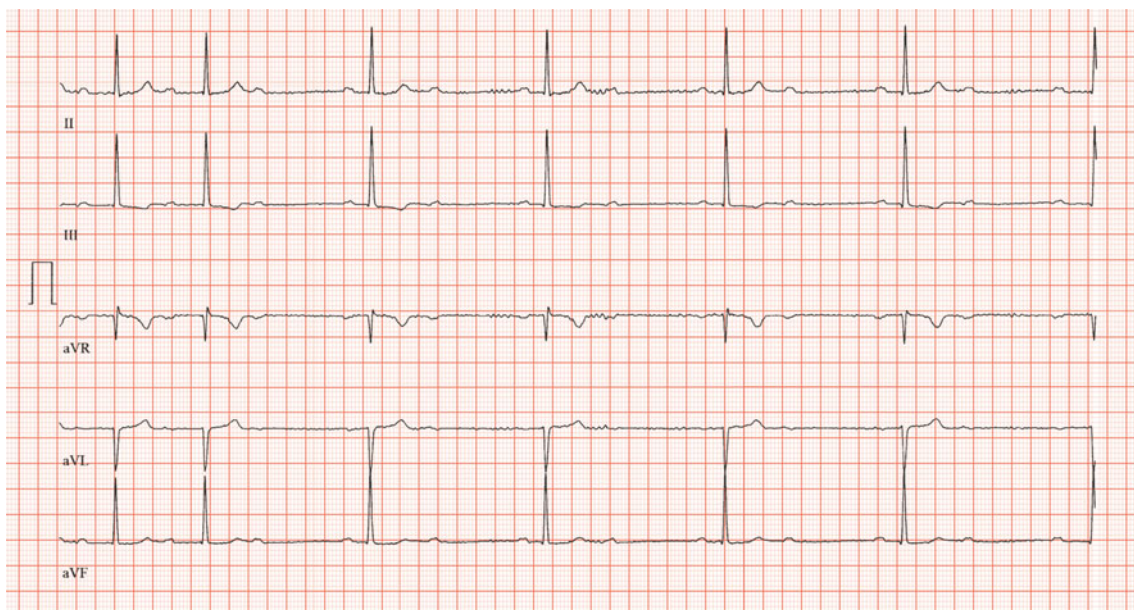
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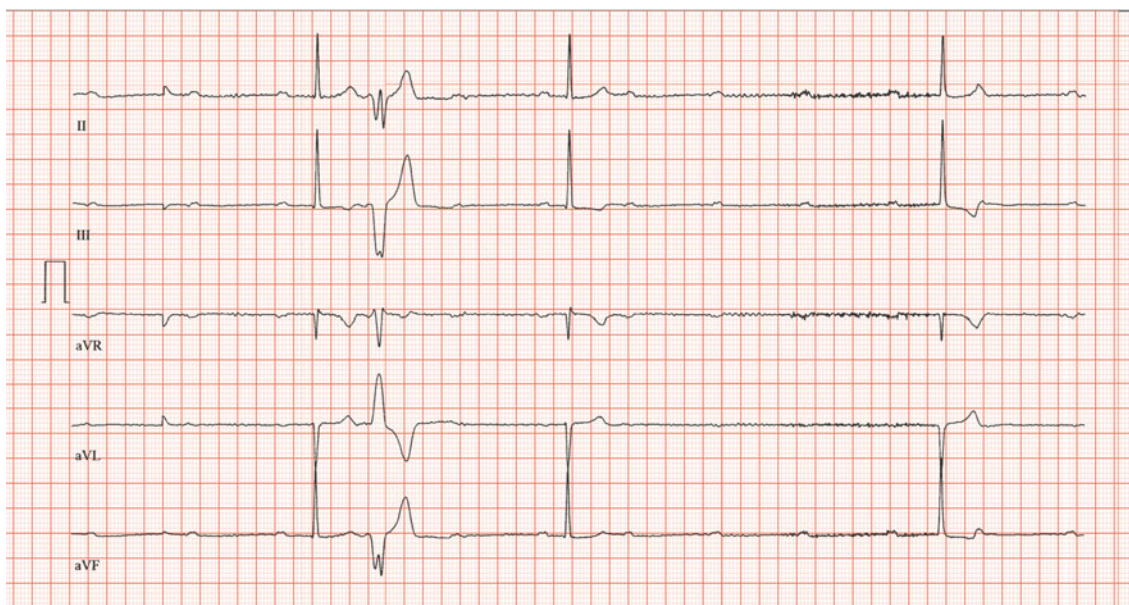


**Figure 1.** Normal sinus rhythm with normal PR interval and no ST abnormalities on the patient who underwent vasodilator stress test with regadenoson.

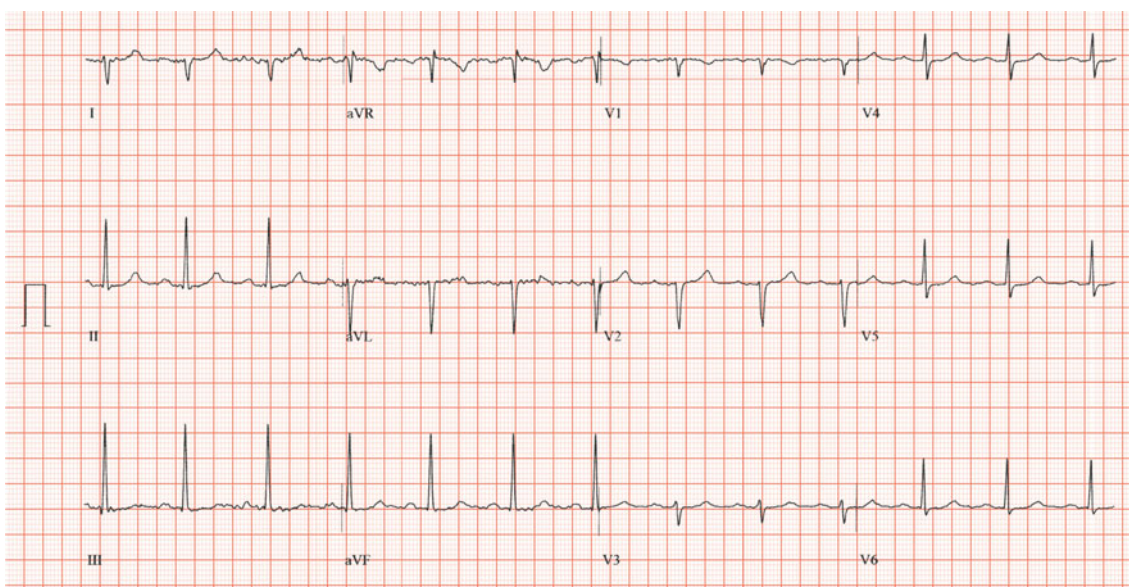


**Figure 2.** At approximately 1.3 minutes into the recovery, the patient developed 2:1 AV block. The patient remained asymptomatic.





**Figure 3.** The rhythm quickly then progressed to third-degree heart block for approximately 14 seconds with ventricular rate of 20 beats per minute.



**Figure 4.** Normal sinus rhythm with no AV blocks after reversal with aminophylline. Aminophylline 125 mg intravenous was given at the time of onset of second-degree heart block over approximately 45 seconds and heart block resolved within 30 seconds. Patient was observed for several hours and was discharged home without any further complications.

### Conflict of interest

*The authors have indicated that they have no financial conflicts of interest.*

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