EKG and U - Atrial Flutter Imitating Inferior ST-Elevation Myocardial Infarction

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Case
A 73-year-old woman presented to the emergency department for 3 hours of palpitations and a feeling of “heaviness all over” including chest heaviness. Her past medical history was significant for paroxysmal atrial flutter managed with amiodarone and oral anticoagulation, hypertension, and asthma. Apart from a pulse of 100 beats per minute, her detailed cardiovascular examination was unremarkable. She was normotensive. The electrocardiogram (EKG) in Figure 1 was interpreted as showing an inferior ST-elevation myocardial infarction. Because the cardiac catheterization laboratory was not immediately available to perform primary coronary intervention, the patient was treated with intravenous thrombolysis.

Figure 1. Initial 12-lead EKG. While the flutter wave makes the inferior ST-segments difficult to interpret, lack of consistent reciprocal changes argues against acute infarction.
EKG Interpretation
The rhythm is atrial flutter with 2:1 AV block at a rate of 98 beats per minute. There are prominent flutter waves in the inferior leads, the timing of which permits every other flutter wave to mimic ST segment elevation. While the atrial flutter cycle-length is somewhat long for atrial flutter (300 ms), this could be explained by the patient's use of amiodarone, which slows conduction velocity in atrial muscle. The QRS axis is normal with no Q-waves and normal R-wave progression. There is no reciprocal ST segment depression in the high lateral leads, though every other atrial flutter wave does mimic subtle ST segment depression in lead aVL (but not lead I).

Discussion
This case demonstrates that atrial flutter waves can mimic ST segment changes, which has been described previously. After electrical cardioversion with confirmation of sinus rhythm, Figure 2, the patient's symptoms resolved and serial cardiac markers were normal. Luckily, the patient did not develop significant bleeding following thrombolysis. Her female sex and older age are risk factors for intracranial hemorrhage, although she did not have hypertension or low body mass index. She was discharged uneventfully from hospital without recurrence of atrial flutter.

Conflict of Interest
None.

References