A 55-Year-Old Man With Acute Myocardial Infarction Develops Tachycardia Following Balloon Angioplasty*

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A 55-year-old man was admitted to the ICU with an acute myocardial infarction. He was managed with immediate cardiac catheterization and balloon angioplasty of a totally occluded right coronary artery, leaving a 30% residual stenosis. The creatine kinase level was 2,200 U/L (17% MB fraction) 6 h after the procedure. At this time, frequent runs of tachycardia begin to occur (Fig 1). The patient is not aware of these, and is free of chest discomfort. Which of the following therapies is most appropriate?

A. Lidocaine
B. Procainamide
C. Digoxin
D. Esmolol
E. Diltiazem

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Answer: A. Lidocaine

The ECG shows a basic sinus rhythm at 75 beats/min, with a 12-beat run of tachycardia that is slightly irregular at a mean rate of 128 beats/min. The QRS complexes during the tachycardia are not extremely wide, but have a duration of 0.12 s. The initial vector is different from that of the sinus-conducted complexes. The most important point that favors a diagnosis of ventricular tachycardia, however, is that the P waves continue through the tachycardia at a rate of approximately 75 beats/min, with atrioventricular dissociation. In the setting of acute myocardial infarction, a wide-complex tachycardia has a particularly high likelihood of being ventricular tachycardia.

Lidocaine has been widely favored for many years as the drug of choice for treating ventricular tachycardia in patients with acute myocardial infarction. Procainamide is the second choice, and should be used if lidocaine fails. However, lidocaine has the advantage of easy adjustability of the blood level and relative freedom from myocardial depression and proarrhythmic risk. Its most frequent side effect is the precipitation of mental status changes and sometimes seizures, especially in elderly patients. Prophylactic lidocaine, given routinely in acute myocardial infarction even though ventricular tachycardia has not occurred, is not beneficial and it has the added risk of the bradyarrhythmia that it causes.

Digoxin, esmolol, and diltiazem are drugs that might be considered for various types of atrial arrhythmia, including fibrillation, flutter, or multifocal atrial tachycardia. They are not useful in ventricular tachycardia, and would not be considered if the ECG is correctly interpreted.

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