A 74-year-old woman with a medical history of atrial fibrillation for 1 year presented with long-standing fatigue, dizziness, and shortness of breath. On physical examination, the patient had a blood pressure of 130/60 mm Hg and a heart rate of 24 beats per minute. The remaining physical examination was unremarkable. The ECG showed a complete atrioventricular block with a sinus rhythm of 100 beats per minute, a QT interval of 770 ms, a corrected QT interval of 486 ms, and a ventricular escape rhythm of 24 beats per minute. While being prepared for a pacemaker implantation, she had an episode of polymorphic ventricular tachycardia leading to ventricular fibrillation (Figure). Prompt defibrillation was achieved with a monophasic shock of 360 J. A temporary pacemaker was inserted, and the implantation of a dual chamber rate-responsive pacemaker was completed without further problems. In patients with complete distal heart block, the escape rhythm is usually very slow. Significant bradycardia is known to increase the QT interval, with subsequent lengthening of the ventricular action potential duration. The latter increases the risk for an extra-stimulus to cause ventricular premature activation. Furthermore, it is not uncommon for competing pacemaker cells to cause frequent ventricular premature beats. This substrate is ideal for the occurrence of a short-long-short sequence (Figure). The compensatory long cycle after a ventricular premature beat results in an excessive lengthening and an increased dispersion of an already abnormal local ventricular refractoriness. If a timely ventricular premature beat occurs, functional conduction block may produce reentrant excitation, leading to polymorphic ventricular tachycardia/fibrillation. Patients with chronic atrioventricular block usually die of ventricular arrhythmias. In patients with advance heart block, pacing needs to be performed without delay.

Disclosures
None.
Arrows indicate p waves in a patient with complete atrioventricular block and a ventricular escape rhythm (first and third beat) with right bundle-branch block morphology. A ventricular premature beat (second beat) causes the first short R-R interval (800 ms), followed by a long R-R interval (1560 ms), affecting the refractory period of the ventricles. A second ventricular premature beat (arrowhead) with a short coupling interval (720 ms) initiates polymorphic ventricular tachycardia as a result of a short-long-short sequence.
From Bad to Worse: Complete Heart Block Leading to Ventricular Fibrillation
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Circulation. 2006;113:e707-e708
doi: 10.1161/CIRCULATIONAHA.105.582148
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the
World Wide Web at:
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