Double Ventricular Parasystole*

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Ventricular parasystole arises from an independent ectopic ventricular focus protected from the dominant pacemaker. It is diagnosed on the bases of (1) varying coupling intervals, (2) a mathematically common shortest interectopic interval, and (3) fusion complexes between parasystole and normal beats. Multifocal ventricular parasystole rarely has been reported. We are presenting a case of double ventricular parasystole.

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CASE REPORT

A 66-year-old man was admitted because of recurrent progressive dyspnea. He had congestive heart failure due to hypertensive cardiovascular disease. Medications for him were 40 mg of furosemide daily, 0.25 mg of digoxin daily, 250 mg of methyldopa every six hours, and 40 mEq of potassium supplement daily. On admission the electrocardiogram showed left ventricular hypertrophy and frequent ventricular extrasystoles. Serum electrolyte levels were normal, and the serum digoxin level was less than 0.5 ng/ml.

The patient's blood pressure and congestive heart failure were controlled. A 24-hour electrocardiographic monitor (Holter) was begun.

Figure 1 shows a continuous ECG of lead V₅. Both leads V₅ (top tracing) and V₁ (bottom tracing) are presented simultaneously on the last strip for the identification of two different groups of ventricular parasystole. Beats 5, 7, 9, 11, 13, 15, 17, 22, 43, 45, 47, 49, 51, 53, 55,...

Figure 1. Continuous ECG of lead V₅. Both lead V₅ (top tracing) and V₁ (bottom tracing) are presented on last strip.
DISCUSSION

The incidence of ventricular parasystole has been estimated to be one in every 900 to 1,200 ECGs taken in a general hospital.1 Double ventricular parasystole can occur in patients with a spontaneous ventricular parasystolic rhythm in combination with a dominant artificial ventricular pacemaker rhythm or in patients with two artificial ventricular pacemakers. Spontaneous double ventricular parasystole is a unique and interesting electrocardiographic finding. Only a few reports were noted following the first case reported by Chung et al1 in 1964.7 The incidence of double ventricular parasystole might be higher if long rhythm strips of simultaneously recorded leads were available.

The electrophysiologic basis for the ventricular parasystole remains obscure. It is suggested that the parasystole arises from a focus or foci protected from a dominant pacemaker, viz., “entrance block.” Ventricular parasystole occurs most frequently with sinus rhythm. It can also occur with atrial flutter, atrial tachycardia, or atrioventricular nodal tachycardia. The inherent rate of impulse formation in the ventricular parasystole may be very rapid, but the actual parasystolic rate on the ECG is slower and variable due to “exit block.” The presence of ventricular parasystolic tachycardia in some cases explains this phenomenon.

In this case the difference of the shortest interectopic interval was 0.07 second in both group 1 and 2 ventricular parasystole. The variation of the shortest interectopic intervals from the authors cited range from 0.08 to 0.27 second. Ventricular parasystolic rates also have a wide range. The majority of ventricular parasystoles has a rate between 30/min and 60/min. In our case the sinus rate was 76 beats per minute, the ventricular parasystolic rate in group 1 was 40/min, and group 2 had a rate of 63/min.

Multifocal ventricular parasystole has been reported.8 In fact, beats 20 and 73 (Fig 1, arrows) might just be another ventricular parasystole. We failed to demonstrate any other beat with the same configurations.

The occurrence of ventricular parasystole is almost always indicative of organic heart disease. Chung et al1 suggested a worse prognosis in patients with double ventricular parasystole, although it may not be directly related to the mortality. Our patient died six months after the detection of his double ventricular parasystole.

In general, ventricular parasystole does not require antiarrhythmic treatment. If the treatment is indicated in patients with symptomatic ventricular parasystolic tachycardia, procainamide or quinidine can be used; however, ventricular parasystole is usually resistant to antiarrhythmic therapy.

REFERENCES

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