Second Degree Entrance Block in Intermittent Ventricular Parasystole*

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In a 21-year-old healthy man, there may be a second degree entrance block occasionally of 2:1 nature resulting in intermittent ventricular parasystole. The refractory period of the ventricular-ectopic (V-E) junction in this case was markedly longer than the ventricular muscle except the V-E junction, but much shorter than the whole length of the parasystolic cycle.

Second degree exit block of the 2:1 type has been reported in several cases of ventricular parasystole. However, second degree entrance block of the 2:1 type in parasystole has, to our knowledge, never been reported before. A case of intermittent ventricular parasystole is presented in which the existence of a 2:1 entrance block is suggested.

REPORT OF ELECTROCARDIOGRAM

The electrocardiograms were obtained from a 21-year-old healthy man who was found to have an irregular pulse on routine examination. The results of the rest of the physical examination, as well as extensive laboratory investigations, were entirely negative.

The electrocardiograms showed sinus rhythm with ectopic beat of ventricular origin. As shown in the lower strip of Figure 1, bigeminal rhythm was frequently seen. Figure 1 is a continuous recording of standard lead 1. Here, the couplings of these ectopic beats to the preceding dominant beats are variable and the interectopic intervals are nearly equal. Figure 1 thus seems to represent a ventricular parasystole.

However, such bigeminal rhythm in this case was not continuous. Consequently, interectopic intervals between the last ectopic beat of the bigeminal rhythm and its next ectopic beat were longer than the basic equal interectopic intervals which were seen in the bigeminal rhythm. These longer intervals were not multiples of the shorter intervals nor was there a common denominator, as shown in the lower strip of Figure 2. We must assume that the parasystolic pacemaker was disturbed in some way which resulted in an intermittent ventricular parasystole.

Figure 2 is a continuous recording of standard lead 1. Slowing of the sinus rhythm seen in the upper strip is due to pressure on the eye ball (Aschner's test). Figures 1 and 2 reveal that, whenever a sinus beat that is conducted to the ventricles occurs within 0.76 sec after the preceding ectopic beat, the sinus impulse is blocked at the ventricular-ectopic (V-E) junction. However, whenever it occurs beyond this period, the sinus impulse penetrates into the parasystolic focus, and results in discharge and resetting of the parasystole. The same feature is found between such a penetrating sinus beat and the next sinus beat.

The period of 0.76 sec is extremely longer than the refractory period of the ventricular muscle except the V-E junction, but shorter than the whole length of the parasystolic cycle. Such a prolonged refractory period of the V-E junction will indicate the presence of a second degree entrance block in intermittent ventricular parasystole.

In the upper strip of Figure 1, twice the sinus cycle length is longer than 0.76 sec (ie, the absolute refractory period of the V-E junction), but not longer than 1.15 sec (ie, the parasystolic cycle length). Here, no ectopic beats are seen. The possible explanation for this is that every second sinus impulse may penetrate into and discharge the parasystolic focus before occurrence of the next predicted parasystolic impulse. If, under the above-mentioned conditions of the sinus rate, a sinus impulse labelled S1 penetrates into and discharges the parasystolic focus, the subsequent sinus impulse (S2) will be blocked at the V-E junction, because the impulse (S2) falls in the absolute refractory period of the V-E junction.

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that of the ventricular muscle except the escape rhythm and continuous parasystole. CHEST, idioventricular rhythm never exceeds that of the ventricular muscle excluding the V-E junction, for example, in the atrioventricular junction, second degree block between normal nodes caused by a variety of microbiologic agents.

Recently, Cohen, Langendorf, and Picka reported such a refractory period in cases of intermittent ventricular parasystole. In their cases, however, it appeared that, during a late phase of the parasystolic cycle, parasystolic centers were also protected from other impulses by diastolic depolarization, though this feature was not clearly demonstrated in some of the cases. In our case, such a late zone of protection is not seen in any stage of the parasystolic cycle, as indicated in Figures 1 and 2. As a result, we are convinced that the observations in the present report demonstrate the presence of a "pure" second degree entrance block without any other mechanism of protection.

**REFERENCES**


**Mediastinal Histoplasmosis with Abscess**

*Richard D. Schneider, M.D., and John D. Reid, M.D.*

A mediastinal mass of clinically undetermined nature was found at autopsy to be an enormous abscess due to secondary infection in granulomatous caseating mediastinal nodes caused by Histoplasma capsulatum. Other complications of mediastinal histoplasmosis are briefly reviewed.

Mediastinal abscesses are so infrequent that they rarely enter in differential diagnosis. Furthermore they have been caused by a variety of microbiologic agents.

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