

## ECG Contest

## Response to ECG, November 2020

## Respuesta al ECG de noviembre de 2020

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Figure 1.

The correct response is 2. Bradycardia-dependent or phase 4 block is a typical phenomenon of a pathological intraventricular conduction system, depending on spontaneous diastolic depolarization. During a long diastole, the tissue fibers undergo progressive hypopolarization. As a result, the tissue will not be able to depolarize. The ability to depolarize can only be recovered with an escape or premature beat, as it restores the membrane's potential to its physiological resting potential. In the ECG (figure 1) the pause after a nonconducted premature atrial beat started phase 4 III degree atrioventricular block. An escape junctional beat permitted recovery of atrioventricular conduction.<sup>1</sup>

Response 4 is obviously wrong because phase 3 block is a tachycardia-dependent block that occurs when an early impulse arrives at the conduction tissue during the refractory period and is not conducted.

Atrioventricular block due to vagal hypertonia is usually nocturnal and anticipated by progressive sinus rhythm slowing and PR interval prolongation (response 1, incorrect).

The absence of manifested junctional extrasystoles or other indirect signs of concealed junctional extrasystole, such as abrupt PR interval prolongation, makes this hypothesis unlikely (response 3, incorrect).<sup>2</sup>

## REFERENCES

1. Rosenbaum MB, Elizari MV, Levi RJ, Nau GJ. Paroxysmal atrioventricular block related to hypopolarization and spontaneous diastolic depolarization. *Chest*. 1973;63:678–688.
2. Schamroth L, Surawicz B. Concealed interpolated A-V junctional extrasystoles and A-V junctional parasystole. *Am J Cardiol*. 1971;27:703–707.

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