Severe sinus bradycardia associated with Remdesivir in a child with severe SARS-CoV-2 infection

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Dear Editor:

In the recent article by Mendez-Echevarria et al. [1], they shared their experience with 8 pediatric patients with COVID-19 treated with Remdesivir in a safe and effective manner. We agree with the authors that therapy with Remdesivir is challenging due to the current limited evidence in children. We noticed that none of their patients had a personal history of heart disease. As Remdesivir cardiovascular side effects are well-known to occur in adults with COVID-19 [2, 3] but not in children, we consider it relevant to communicate our experience with a child who develops severe bradycardia.

In November 2020, we attended a 13-year-old boy with a history of episodic asthma who was diagnosed with severe bilateral pneumonia with hypoxemia by SARS-CoV-2. He started on oxygen therapy, dexamethasone, ceftriaxone, and Remdesivir (load dose of 200 mg/day, followed by 100 mg/day). After the third dose of Remdesivir, we noticed an asymptomatic and non-hemodynamically significant sinus bradycardia (40 bpm from previous HR of 80–90 bpm) that was confirmed on the ECG. We stopped Remdesivir with normalization of the HR (80–100 bpm) in the following 24 h. Serial cardiac biomarkers and echocardiography remained unremarkable. A Naranjo scale value of 6 points suggested that bradycardia was a probable side effect of Remdesivir. The patient evolved satisfactorily and was discharged after 5 days without complications.

Bradycardia associated with Remdesivir in our patient could be explained by the fact that Remdesivir is an adenosine analog [3] with similar blocking effects at the atrioventricular node. Also, its binding to human mitochondrial RNA-polymerase could produce cardiotoxicity [2, 3]. Our case points out the need for continuous cardiac rhythm monitoring in children under treatment with Remdesivir, especially in those with underlying heart diseases, a population at risk for worse clinical outcomes in COVID-19 and therefore more likely to receive this treatment.

Compliance with ethical standards

Conflict of interest The authors declare that there is no conflict of interest.

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