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IMAGES IN ELECTROPHYSIOLOGY

Transient left bundle branch block associated with favipiravir treatment for coronavirus infection

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Abstract

The coronavirus disease 2019 (COVID-19) may lead to a wide spectrum of clinical manifestations ranging from asymptomatic to symptomatic by having targets on various tissues such as lung parenchyma and myocardium (Shahrbaf et al., Cardiovasc Hematol Disord Drug Targets. 21(2):88–90, 2021). As an RNA-dependent RNApolymerase inhibitor, favipiravir has been proposed as a treatment in clinical studies done during the pandemic period (Furuta et al., Antiviral Res. 100(2):446–454, 2013). Although favipiravir is generally a safe medication, it may rarely cause cardiac adverse effects (Shahrbaf et al., Cardiovasc Hematol Disord Drug Targets. 21(2):88–90, 2021). To the best of our knowledge, favipiravir has not been reported to cause left bundle branch block (LBBB).

The coronavirus disease 2019 (COVID-19) may lead to a wide spectrum of clinical manifestations ranging from asymptomatic to symptomatic by having targets on various tissues such as lung parenchyma and myocardium [1]. As an RNA-dependent RNA-polymerase inhibitor, favipiravir has been proposed as a treatment in clinical studies done during the pandemic period [2]. Although favipiravir is generally a safe medication, it may rarely cause cardiac adverse effects [1]. To the best of our knowledge, favipiravir has not been reported to cause left bundle branch block (LBBB).

A 46-year-old male patient presented to our hospital with fatigue, dry cough, and progressive shortness of breath. Polymerase chain reaction of the nasopharyngeal swab was positive for SARS-COV-2. The patient was started on COVID-19 pneumonia treatment according to the local guidelines in Turkey, which contained oral 1600 mg twice per day for 1 day then 200 mg twice per day, and paracetamol as needed for fever. His admission ECG showed normal sinus rhythm and QRS complexes (Fig. 1A). During treatment, the patient presented to outpatient clinic with palpitations. His presentation on ECG was remarkable with transient LBBB (Fig. 1B). Echocardiography was unremarkable. Serial troponin tests were negative, and other laboratory tests including electrolytes were within the normal range. A coronary computerized tomography demonstrated normal coronary arteries. Favipiravir treatment was discontinued. Cardiac MRI was unremarkable with no late gadolinium enhancement or myocardial edema. Favipiravir treatment was proposed as the most likely underlying etiology.

The antiviral drugs in use for COVID-19 management have been shown to cause multiple dysrhythmias [3]. Favipiravir is an antiviral drug used against various viral infections such as influenza, COVID-19, and Ebola viruses. Favipiravir exerts its effect as an RNA-polymerase inhibitor [2]. Although it is uncommon, a few studies reported possible cardiac dysrhythmias, namely sinus bradycardia, QTc interval prolongation, and TdP with this drug [3, 4]. However, there are no data regarding favipiravir-related LBBB. Temporal association of development of LBBB with initiation of favipiravir treatment and absence of alternative underlying cause indicates that favipiravir treatment is the most likely insult resulting in this conduction abnormality.

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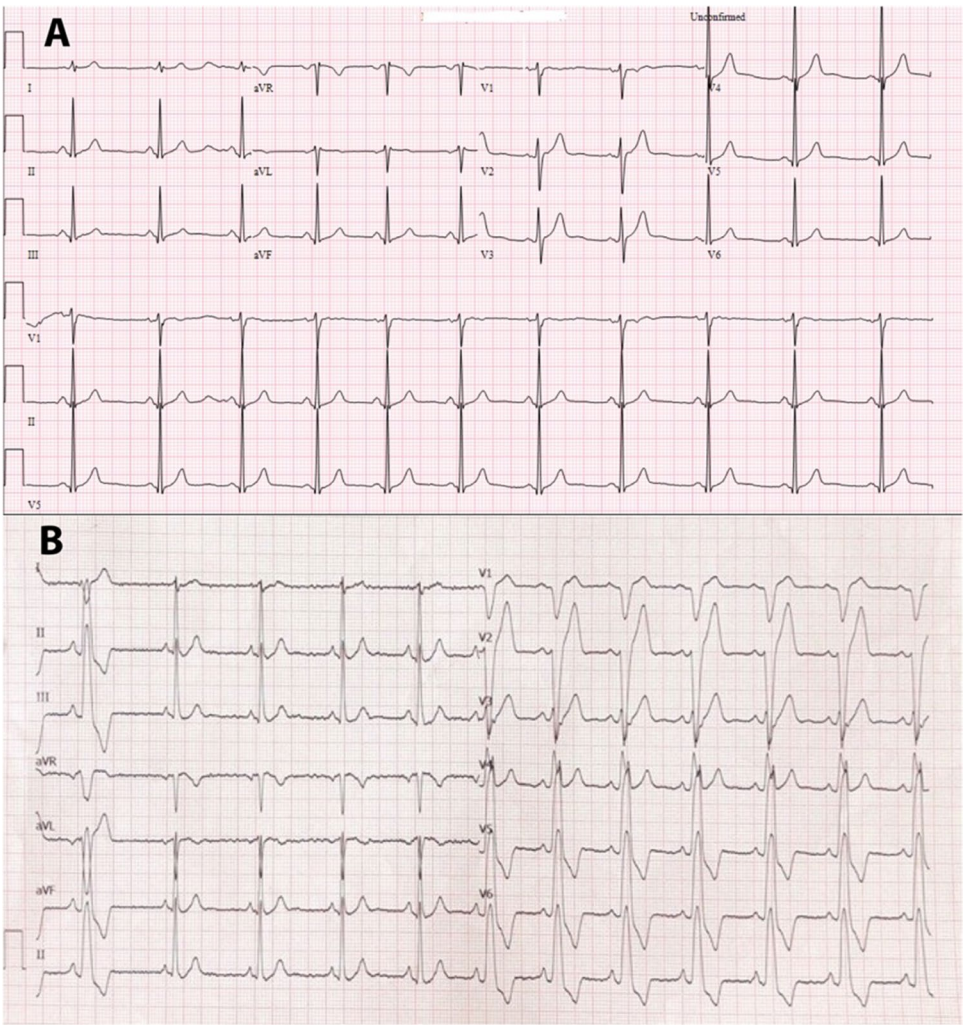


Fig. 1 **A** Admission ECG showing normal sinus rhythm and QRS complexes. **B** Remarkable presentation on ECG with transient LBBB

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Declarations

Ethical approval The institutional ethics committee approval was waived due the case report structure.

Conflict of interest The authors have no conflicts of interest to disclose.

References

1. Shahrbaf MA, Tabary M, Khaheshi I. Cardiovascular considerations of remdesivir and favipiravir in the treatment of COVID-19. Cardiovasc Hematol Disord Drug Targets. 2021;21(2):88–90.
2. Furuta Y, Gowen BB, Takahashi K, Shiraki K, Smee DF, Barnard DL. Favipiravir (T-705), a novel viral RNA polymerase inhibitor. Antiviral Res. 2013;100(2):446–54.
3. Chinello P, Petrosillo N, Pittalis S, Biava G, Ippolito G, Nicastri E. QTc interval prolongation during favipiravir therapy in an Ebolavirus-infected patient. PLoS Negl Trop Dis. 2017;11(12):e0006034.
4. Habib MB, Elshafei M, Rahhal A, Mohamed MFH. Severe sinus bradycardia associated with favipiravir in a COVID-19 patient. Clin Case Rep. 2021;9(8):e04566.

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