Post-Covid 19 arrhythmia? Wolf parkinson white syndrome case report

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ABSTRACT

The purpose of this case report is to emphasize the very rare association of COVID-19 with Wolf-Parkinson-White (WPW) syndrome and the emergency management of this clinical condition.

A 30-year-old female patient with a diagnosis of COVID-19 applied to our emergency department on the 6th day with complaints of increasing fever, shortness of breath and tachycardia for two days. ECG showed sinus tachycardia, short PR interval and delta wave, which was consequent with WPW syndrome.

With this case report, we emphasized that WPW should be considered in the differential diagnosis of patients with COVID-19 who applied to the emergency department with complaints such as tachycardia and shortness of breath, although it is rare.

Keywords: Wolf Parkinson White, arrhythmia, COVID-19

On December 31, 2019, the World Health Organization (WHO) was informed about cases of pneumonia with unknown cause identified in Wuhan City, Hubei Province, China. On January 12, 2020, it was reported that a new coronavirus had been identified in the samples acquired from the cases, and as a consequence of the study, the virus was determined to be the source of the pandemic. This virus was identified as SARS-CoV-2, and the associated disease was COVID-19. The clinical picture encompasses a broad spectrum, ranging from asymptomatic illness or mild upper respiratory tract disease to severe pneumonia that will result in respiratory failure and even death [1, 2]. Fever, lethargy, muscle and joint discomfort, headache, nausea and vomiting, diarrhea, cough, and shortness of breath are some frequent symptoms. In COVID-19, acute respiratory failure, septic shock, acute respiratory distress syndrome (ARDS), and multiple organ failure syndrome (MODS) are the leading causes of mortality and hospitalization [3] In addition to respiratory involvement, which causes high mortality and morbidity, it has recently attracted the attention of researchers due to the high rate of extra respiratory involvement such as cardiac, hematological, neurological, renal, hepatic, gastrointestinal, and immunological systems [4-6]

Wolff-Parkinson-White (WPW) syndrome is a kind of ventricular pre-excitation that affects the accessory

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conduction pathway and affects between 0.1% and 3.0% of the population. Wolff, Parkinson, and White first defined the syndrome in 1930 as comprising paroxysmal tachycardia episodes, a short PR interval, and bundle branch block in young, healthy persons with normal heart anatomy. The estimated prevalence of a WPW pattern on electrocardiography (ECG) in the general population is 0.13 to 0.25 percent. The traditional WPW ECG pattern is characterized by two primary characteristics: a short PR interval and a broadened QRS complex due to a delta wave [7, 8]

This case report aims to highlight the extremely rare relationship between COVID-19 and WPW, as well as the emergency room management of this condition.

CASE REPORT

A 30-year-old female was presented to our emergency department on the sixth day after her COVID-19 diagnosis with complaints of two days of growing fever, shortness of breath, and palpitations. It was discovered that she was admitted to an external facility for COVID-19 pneumonia, discharged two days ago, and did not have a chronic condition. The patient's medical history included the usage of methyl prednisolone and clarithromycin.

Her overall status was fair, and she was conscious and dyspneic. Vital signs; fever 38.5 °C, blood pressure 110/80 mmHg, heart rate 103 beats/min, and SpO_2 95%. Respiratory sounds revealed broad rales in both lungs, but no abnormal signs were observed in other system investigations. Laboratory values were WBC:26500/mL, Lymphocyte 3100/mL, CRP 3.43 mg/L, BUN 17 mg/dL, creatinine 0.7 mg/dL. On thorax CT, both lungs have a diffuse ground glass appearance. The patient's ECG revealed sinus tachycardia, a short PR interval, and a delta wave, consistent with Wolf-Parkinson-White syndrome (Figure 1).

Chest diseases and cardiology consultation was requested from the patient. Medical treatment was arranged for the patient, who was evaluated by cardiology, and outpatient control was recommended for ablation planning. COVID positive hospitalization was given by pulmonologists for the treatment of covid pneumonia.

DISCUSSION

The majority of patients with a WPW ECG pattern are asymptomatic. As part of the WPW syndrome, a small proportion of patients with a WPW pattern experience arrhythmias. The majority of people with arrhythmia may exhibit symptoms including palpitations, dizziness, syncope/presyncope, chest discomfort, and cardiac arrest [9]. Patients with a WPW pattern who are asymptomatic do not require emergency care. To establish the patient's risk of getting tachyarrhythmia, it may be beneficial

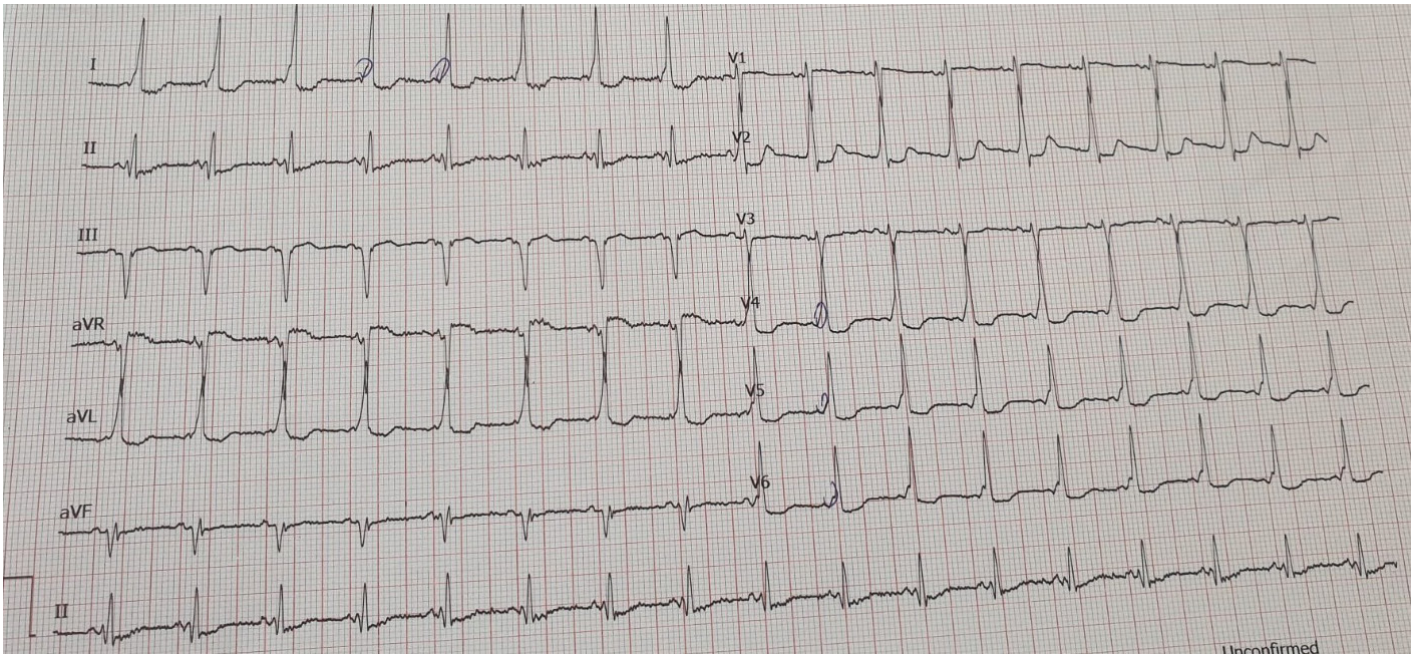

Figure 1. ECG of the case

to have them evaluated by a cardiologist or electrophysiologist. Depending on their level of risk, type and characteristics of the accessory route, cardiac comorbidities and other medical problems, high-risk patients may benefit from preventative antiarrhythmic medications or prophylactic accessory pathway ablation [10]. Many regard transcatheter ablation to be the first-line treatment for WPW due to its definite treatment potential. Radiofrequency ablation (RFA) and cryoablation are procedures included in transcatheter ablation. Due to its higher success rate and reduced recurrence in quelling accessory pathways, RFA is regarded the gold standard for invasive management [8]

Palpitations are a common symptom, especially in patients without fever and cough. In a research involving 137 patients admitted for COVID-19 infection, 7.3% of patients presented with palpitations [11]. The incidence of cardiac arrhythmia (atrial or ventricular) in COVID-19 may be attributable to myocardial injury or inflammatory stress, neurohormonal, fever, hypoxia, metabolic dysregulation, sepsis, or electrolyte imbalance; however, this is unclear. Even numerous antivirals and antibiotics used to treat the condition can produce arrhythmias [12, 13].

At the onset of COVID-19, azithromycin (AZM) and hydrocycloquine (HCQ) were commonly used in combination. It has been observed that there are significant cardiac hazards connected with the use of these two medicines, and that cardiac arrhythmias produced by prolonging of the QT interval may enhance the risk of death in patients receiving this combination [14, 15]

In a study of COVID-19 patients, sinus tachycardia was found to be the most common type of arrhythmia, especially in severe and critical cases, whereas ventricular tachycardia and atrioventricular block are uncommon and occur mostly in the critical state and terminal stage of the disease [16]

It has been reported that several medicines (AZM, HCQ) used to treat COVID-19 can cause cardiac arrhythmias [14, 15, 17]. In our circumstance, neither AZM nor HCQ were used. She had previously utilized methyl prednisolone and clarithromycin. We found no cases of WPW in the literature related to the usage of methyl prednisolone and clarithromycin.

As far as we are aware, the literature does not contain any references to the cohabitation of COVID-19 and WPW. We believe that this is the first case reported in the literature. Although uncommon, we stressed in this case report that WPW should be evaluated in the differential diagnosis of COVID-19 patients presenting to the emergency room with complaints such as palpitations and shortness of breath

CONCLUSION

Authors' Contribution

Study Conception: FBÇ, MY, MOA, HK, İA, UO,; Study Design: FBÇ, MY, MOA, HK, İA, UO,; Supervision: FBÇ, MY, MOA, HK, İA, UO,; Materials: FBÇ, MY, MOA, HK, İA, UO,; Data Collection and/or Processing: FBÇ, MY, MOA, HK, İA, UO,; Statistical Analysis and/or Data Interpretation: FBÇ, MY, MOA, HK, İA, UO,; Literature Review: FBÇ, MY, MOA, HK, İA, UO,; Manuscript Preparation: FBÇ, MY, MOA, HK, İA, UO and Critical Review: FBÇ, MY, MOA, HK, İA, UO.

Conflict of interest

No potential conflicts of interest relevant to this article were reported.

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