CASE REPORT

RIGHT VENTRICULAR OUTFLOW TRACT TACHYCARDIA AS A MODE OF PRESENTATION IN A COVID-19 PATIENT

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The novel Coronavirus (SARS-CoV2) causes a multi system illness. Cardiac complications including a variety of arrhythmias have been reported. We report a young female with Right Ventricular Outflow Tract – Ventricular Tachycardia (RVOT-VT) as a first presenting symptom of Covid illness.

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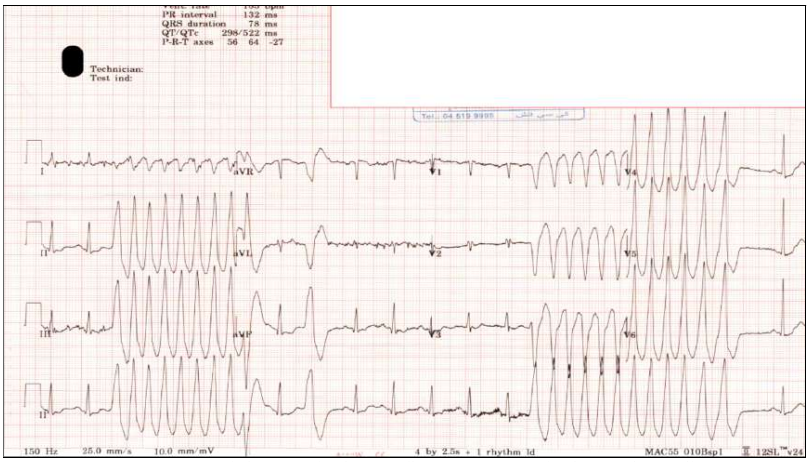
CASE REPORT

A 41-year-old previously healthy female with no known past medical history of significance, presented to the Emergency Department with sudden onset of intermittent palpitations and light headedness. The first episode at home lasted for 45 minutes before settling spontaneously. However, later she developed intermittent episodes of relatively short-lived palpitations which continued for nearly 3 hours before the presentation.

On admission, she was hemodynamically stable and cardiac monitoring showed a wide complex tachycardia at 180 beats/min. A 12 lead ECG confirmed monomorphic ventricular tachycardia consistent with Right ventricular outflow tract ventricular tachycardia (RVOT-VT), alternating with Sinus rhythm (Figure-1). She was treated with intravenous beta blockers (metoprolol 2mg slow) followed by oral bisoprolol 5mg. Within a few minutes of Beta blocker administration, she reverted and maintained Sinus rhythm with no further breakthrough tachyarrhythmia's (Figure-2). She was admitted for 24 hours monitoring.

Her Blood tests showed mild leucocytosis; however, the remainder of her results were within normal limits. Her Chest X-ray and Transthoracic Echocardiography were also normal. However, 12 hours after the presentation, she suddenly developed high grade fever at 39C followed by two similar spikes within the next 1 hour. In view of the unexplained fever, an urgent COVID PCR test was sent and patient was isolated pending results. The Covid PCR results returned positive. Her temperature settled with regular oral paracetamol however she remained free of typical Covid symptoms. In view of rather mild symptoms and no further rhythm disturbances, she was discharged home and was advised to complete 2 weeks quarantine.

She returned for follow up after an unremarkable course of disease. For completion, we performed a coronary angiography to exclude coronary cause of arrythmias which showed normal coronary arteries. We carried out a 24-hours Holter monitoring after withholding beta blockers for 48hrs. It demonstrated normal sinus rhythm throughout. She has been followed 8 months after her initial presentation and reported no symptoms with normal Holter ECG monitoring.



RVOT-VT= Right Ventricular Outflow Tract Ventricular Tachycardia

Figure-1: 12 lead electrocardiogram revealing RVOT-VT

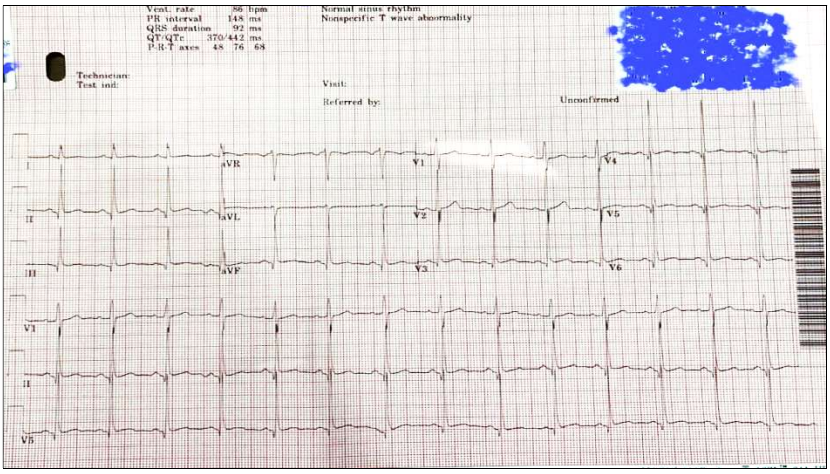


Figure-2: Sinus Rhythm after Betablockers

DISCUSSION

In this case we describe an interesting presentation of Right Ventricular Outflow Tract – Ventricular Tachycardia (RVOT-VT) as a first presenting symptom of Covid illness with a good clinical outcome.

The Coronavirus, first identified towards the end of 2019, has led to a worldwide pandemic.[1] The effects of this virus have been reported on human biology and psychology. Although COVID-19 is generally considered to affect the respiratory tract, there is significant literature evidence for the cardiovascular manifestation of the illness. We know that COVID-19 infection in patients with pre-existing cardiovascular disease (CVD) tends to increase morbidity and mortality in the form of myocardial injury, arrhythmia and acute coronary syndrome. Chen at all have reported the various cardiac complications of Covid illness.[2] Similarly, Bhatla *et al* have reported high incidence of cardiac arrhythmias in hospitalized Covid 19 patients.[3] Several underlying mechanisms such as Sepsis, Hypoxia, Drugs (azithromycin, quinine), metabolic derangement, pulmonary embolism, Pericarditis/pleuritis and dehydration are reported to act as intermediatory factors for causation of arrhythmias.[4,5] Prolonged QTc is commonly believed to be an addition factors in the development of life threatening arrhythmias. Farre *et al* disagrees and suggests that whilst Prolonged QTc may be present in 10% of Covid admission and represents poorer outcome, no causal relationship was established between QTc and Cardiac rhythm disturbances.[6] Immunological factors during cytokine storm and inflammatory processes may lead to the alteration in repolarization potentials but whether such processes occur during Covid illness, are yet to be known.[7]

The lack of associated comorbidities, risk factors and virtually no symptoms in our patient highlights the unique nature of the case. All the proposed pathophysiological mechanisms mentioned in the literature were not applicable in our case, highlighting the need for clinical monitoring in patients, and the need for further research on the topic. Furthermore, cardiac damage (leading to dysrhythmias) is due to systemic inflammation in multiple studies[6,8], however, our patient only showed normal inflammatory markers except mildly elevated white cell count. Treatments such as hydroxychloroquine and some antibiotics may lead to prolongation of QTc but our patient was not on such medicines and her QTc was normal.[9]

CONCLUSION

Covid infection can present with broad complex tachyarrhythmia's as a first presentation although the causal mechanisms are not yet clear. The possibility of COVID-19 infection to lower the repolarization threshold, conduction disorders through sympathetic system, over activation in patients with no prior significant medical history need to be studied in future research.

Conflict of Interest:

None

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