

Chloroquine-diphosphate/ciprofloxacin/meropenem**S****Various toxicities: case report**

A 64-year-old woman developed Torsades-de-pointes and fatal pulseless ventricular tachycardia during off-label treatment with chloroquine diphosphate. She also received off-label treatment with ciprofloxacin and meropenem and experienced hypokalaemia secondary to meropenem.

The woman presented to an emergency department in Indonesia with dry cough, fever and shortness of breath. She had contact history with a COVID-19 confirmed patient. Following various investigation and hospitalisation, a diagnosis of COVID-19 pneumonia was confirmed. Her baseline ECG showed normal sinus rhythm QT interval of 380ms and Fridericia's corrected QT interval (QTc) of 441 ms (475 ms with Bazett's formula). Following diagnosis of COVID-19 pneumonia, she received off-label treatment with oral chloroquine diphosphate [chloroquine phosphate] 500mg BID, IV meropenem 1g TID and IV ciprofloxacin 400mg BID. She also received heparin [unfractionated heparin] as pulmonary embolism prophylaxis. On day 5 of hospitalisation, her respiratory condition deteriorated and she required invasive mechanical ventilation and intensive care with continuous ECG monitoring. Laboratory investigation showed decreased absolute lymphocyte count, serum potassium level (hypokalaemia) and serum calcium level, and increased neutrophil percentage with a total white cell count of 9800 cell/ μ L and serum procalcitonin of 0.1 ng/mL.

The woman received treatment with calcium and potassium. Her continuous ECG monitoring did not show any significant changes from the baseline ECG. Her overall condition was stable. However, on day 9 of hospitalisation, she experienced two sudden episodes of malignant arrhythmias within 24 hours apart. Her first arrhythmia was Torsades-de-pointes that was preceded by sinus tachycardia. Her ECG showed Fridericia QTc was 292 ms (353 ms with Bazett). Cardiopulmonary resuscitation (CPR) performed and defibrillator was prepared. Soon her rhythm spontaneously turned to asystole and CPR was continued. After two minute of CPR, her spontaneous circulation return with sinus tachycardia and evident T-wave alternans. She received magnesium sulfate and potassium, and chloroquine diphosphate was discontinued. Her serum electrolytes upon the episode of Torsades-de-pointes showed normal sodium, potassium, calcium and magnesium levels, but serum troponin I level was increased. Her blood samples was collected after CPR. Her second episode of arrhythmia lead to fatal pulseless ventricular tachycardia that occurred within 20 hours from the onset of Torsades-de-pointes. Even after vigorous resuscitation, she died. Her blood investigation prior to death showed lymphopenia and she had signs of multiorgan failure, including liver injury, acute kidney injury, coagulopathy and increased proinflammatory markers. The lethal arrhythmia was considered as a synergistic effect of chloroquine diphosphate-induced arrhythmia, COVID-19 pneumonia associated cardiac injury and hyperinflammatory response.

Yasmin Kusumawardhani N, et al. Lethal Arrhythmia (Torsade de Pointes) in COVID-19: An Event Synergistically Induced by Viral Associated Cardiac Injury, Hyperinflammatory Response, and Treatment Drug?. *Clinical Medicine Insights: Case Reports* 13: no pagination, 2020. Available from: URL: <http://doi.org/10.1177/1179547620972397>

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