Case Report

Sudden Death Following Suicide with Colchicine and Chloroquine

Abstract

Poisoning with any of the colchicine or chloroquine drugs is rare. These drugs exert therapeutic and toxic effects on tissues by different mechanisms. Colchicine is used to treat a number of rheumatologic diseases and heart problems. In addition, chloroquine is used to treat malaria and some inflammatory diseases. There is a small gap between the therapeutic and toxic doses of these drugs. Gastrointestinal symptoms are the initial causes of poisoning with these drugs and then widespread organ failure in later stages can lead to sudden cardiac death. We introduce a case of concurrent poisoning with both drugs, in which the patient presented with a headache, nausea, and vomiting several hours after suicide. On the 1st day, the patient's status was stable, but on the 2nd day, the patient suddenly becomes ill and died even though the patient received supportive therapy. Concurrent poisoning with chloroquine and colchicine is extremely lethal, and early aggressive management is recommended even in an apparently stable patient.

Keywords: *Chloroquine, colchicine, poisoning, suicide*

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Introduction

Colchicine is an old antimitotic drug and potent inhibitor of intracellular transport that is used to treat connective tissue disorders, pulmonary fibrosis, atherosclerosis, pericarditis, and myocardial infarction.[1-3] Gastrointestinal (GI) symptoms are the first clinical symptoms of colchicine poisoning. Multiorgan involvement is quickly followed by pancytopenia, respiratory failure, kidney failure, neuropathy, myopathy, and elevated liver enzymes.[4,5] Colchicine poisoning is extremely lethal. The lethal dose of colchicine is 0.8 mg/kg.[5,6]

Chloroquine is an old drug with immunomodulatory effects, which also acts against inflammation, oxidation, and fibrosis. Chloroquine is commonly used in the treatment of connective tissue diseases, malaria, and, more recently, in the treatment of COVID-19.[7-9] Clinical characteristics of chloroquine toxicity include GI problems, cardiac dysrhythmia, central and peripheral nervous system symptoms, respiratory depression, hypoglycemia, hypokalemia, thrombocytopenia, and agranulocytosis.[1,7,8] The toxic dose of chloroquine is 5 g.[1]

Patients often refer to hospitals because of the side effects of colchicine and chloroquine, while poisoning with any of these drugs rarely occurs.[3,4] A comprehensive literature review did not yield any case description of toxicity induced by a combination of colchicine and chloroquine. Here, we report a case of fatal colchicine and chloroquine poisoning, which led to sudden cardiac arrest.

Case Report

The 41-year-old female referred to the medical toxicology department of Noor Hospital in Isfahan on January 18, 2019. The patient was alert and complained of headache, nausea, and vomiting. The patient stated that about 11 h ago, she took 20 tablets of colchicine 1 mg, 20 tablets of chloroquine 250 mg, and 40 tablets of Telfast 120 mg for suicide attempt. The patient had a history of addiction to opium and had used methadone syrup recently. She also had a history of gout, hypothyroidism, fatty liver, nephrolithiasis, and pulmonary surgery due to empyema and had been treated with levothyroxine, Telfast, and colchicine. The patient had no previous suicide attempts. On examination, the pupils were normal in size and symmetrical. Heart and lung examinations were normal. She complained of mild pain in the epigastric

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area. The vital signs were normal. The patient's laboratory values were in the normal range at admission and on the 1st day. The patient underwent conservative treatment with hydration and cardiopulmonary monitoring. Twelve hours after admission, large–bore IV access was taken, and normal saline was started due to decreased blood pressure.

Then, 24 h after admission, the pain was suddenly exacerbated in the epigastric area and radiated to the hypogastric part. She again complained of headache, nausea and vomiting, burning sensations in the limbs, and diarrhea. In addition, 36 h after admission, the patient initially complained of visual loss, and after 48 h of hospitalization, her blood pressure dropped sharply so that the radial pulse was not detectable, followed by a decrease in blood sugar and saturation of peripheral oxygen. She was intubated. Electrocardiographic abnormalities included the right bundle branch block and left posterior hemiblock, and then developed to cardiac arrest. The patient died 2 h later despite the cardiopulmonary resuscitation.

Decrease in platelet count (109 × 103/mm³), serum sodium (128 mEq/L), and blood sugar (25 mg/dl), severe respiratory acidosis (pH: 6.557), and increase in serum potassium (4.8 mEq/L), creatinine (3.5 mg/dl), partial thromboplastin time (>120 s), international normalized ratio (>5.7), aspartate aminotransferase (513 U/l), and alkaline phosphokinase (2536 U/l) were the most important laboratory findings of the patient on the 2nd day of hospitalization.

Discussion

Suicide with either colchicine or chloroquine drugs is rare.[3,4] This is the first case of intoxication by a combination of colchicine and chloroquine in our ward.

The toxic dose for colchicine is not well established but an ingestion of 7–26 mg may induce death.[5] The total intake of colchicines in our patient was 20 mg (0.4 mg/kg), which is within the toxic range. In addition, our patient had ingested 5 g of chloroquine, which is equivalent to a highly toxic dose.[1]

Symptoms of chloroquine poisoning usually begin within 1–3 h with GI symptoms and then in severe intoxication, systolic blood pressure <80 mmHg, QRS complex duration >120 ms, ventricular fibrillation, and hypokalemia can be precipitous.[1,10] Our patient showed the same course of symptoms but had no hypokalemia.

Poisoning with colchicine manifests itself in three phases: in the first phase and after a few hours, the symptoms of GI irritation appear. In the second phase, widespread organ dysfunction occurs and lasts for several days. After a week and in the last phase, death or recovery will occur. Death usually occurs due to multiorgan failure caused by hemodynamic collapse, sepsis, cardiac arrhythmia, and cardiogenic shock.[1,3,6]

Colchicine cardiac toxicity is due to its dose-dependent reduction in effective refractory period and maintaining a stable repolarization period and is associated with the development of dysrhythmias, complete atrioventricular block, and cardiac arrest. The patients have a risk of sudden cardiovascular collapse within the first 24–48 h.[1,2]

It seems that our patient only experienced the first phase of colchicine poisoning and died before the second phase of poisoning due to severe chloroquine poisoning or, most likely, the effects of simultaneous cardiac toxicity of both drugs.

Unlike what is known from previous reports for each of these drugs, our patient showed certain signs and symptoms, which was probably related to the drug interaction. Our case had several underlying diseases. Critical underlying diseases can increase the risk of death in these types of poisoning.[6] Because the laboratory values on admission were normal, none of these diseases are evaluated as severe, and it seems that none of them had a role in exacerbating the poisoning and death of the patient.

There are unknown antidotes for chloroquine or colchicine poisoning. Patients with chloroquine or colchicine overdose should be managed with supportive care and expectant observation.[4,10] Early GI decontamination methods, multiple-dose activated charcoal, and in severe refractory cases, extracorporeal membrane oxygenation therapy is recommended for the treatment of poisoning with both drugs.[1,10] Early endotracheal intubation and mechanical ventilation, high-dose epinephrine and diazepam infusion in chloroquine poisoning and colchicine-specific antibodies and granulocyte-colony stimulating factor in colchicine poisoning, are recommended and reduce the mortality rates.[2,4,6] Unfortunately, in our case, the referring and consequently, the treatments were delayed. As a result, GI decontamination was not performed, and the drugs had been absorbed, and the patient died despite supportive treatments. Our study limitation was that we could not determine the serum level of colchicines or chloroquine in our country.

Conclusion

Concurrent poisoning with chloroquine and colchicine is extremely lethal, and early aggressive management is recommended even in an apparently stable patient.

Declaration of patient consent

The authors certify that they have obtained appropriate patient consent forms. In the form, the patient's father has given his consent for her clinical information to be reported in the journal. He understood that her name will not be published and due efforts will be made to conceal her identity.

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Conflicts of interest

There are no conflicts of interest.

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