CASE STUDY

DEATH FROM COVID-19 OF A 57-YEAR-OLD MAN REFUSING MEDICAL CARE AND SELF-MEDICATING WITH IVERMECTIN

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SUMMARY

Since December 2019, the new SARS-CoV-2 coronavirus causes COVID-19 disease worldwide, which occurs mainly in unvaccinated elderly and polymorbid patients with a more severe course and increased risk of complications and death. Vaccination and specific therapy for the disease using mainly new antiviral drugs are the way to reduce the number of infected, hospitalized patients with a more severe course. We present a case report of an at-risk polymorbid 57-year-old man who refused vaccination and standard treatment for COVID-19 disease based on misinformation from the community. He self-treated himself with high dose of ivermectin. The patient died at home 14 days after the onset of symptoms.

Key words: COVID-19, ivermectin, misinformation, refusing medical care

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INTRODUCTION

Since December 2019, an increasing number of pneumonias caused by a new coronavirus have been observed in the Chinese city of Wuhan, Hubei province. The new SARS-CoV-2 coronavirus has been identified as the causative agent of the disease and has spread rapidly, with cases already being reported from other Chinese cities and more than a dozen countries around the world by the end of January 2020. Human-to-human transmission was observed soon after the onset of the disease. The incubation period averages 5–6 days (1). Up to 20% of cases are asymptomatic. However, most patients experience mild respiratory and pulmonary disease. The clinical manifestations of the disease are very varied. They include general condition, breathing, sense distortion of taste and smell, pain in various parts of the body, and gastrointestinal problems. Patients with a moderate to severe course often present with very dangerous silent hypoxia without dyspnoea (2). The most common complications include acute respiratory distress syndrome, thromboembolic events, multiorgan failure, sepsis, and shock.

Case Report

The emergency medical service was called to a 57-year-old man after collapse, who had been diagnosed with COVID-19 disease 6 days earlier by an antigen test. The medical history revealed treated arterial hypertension, hypercholesterolemia, type 2 diabetes mellitus treated with diet and oral antidiabetics, gout, and obesity (height 177 cm, weight 115 kg, BMI 36.7). The patient had not been vaccinated against COVID-19 even at the time of publicly available vaccination. He refused this as insufficiently verified and therefore dangerous. He reported that he had been using ivermectin at the doses recommended in an internet discussion group and was feeling well. To be able to use this drug, he bought the freely accessible veterinary ivermectin. After a basic securing of the patient by the paramedics, the man was transferred to the specialized covid outpatient department of the infectious disease clinic.

The patient was conscious, fully present, calm and communicative in the ambulance. He had fever of 38.8 °C, mild tachypnoea with 20 breaths per minute, no cyanosis, oxygen saturation 88% on air, tachycardia with 115 pulses per minute, and blood pressure 145/90 mmHg. Auditorily the respiration was depressed, with crepitations and discrete wheezes at slightly prolonged expiration. During the investigation, the patient downplayed his condition and emphasized that the self-medication he had received at home was correct. After a longer interview, the patient agreed to at least start the initial therapy suggested by the doctor. Oxygen therapy with a mask was started, a nebulizer solution containing 5 mg of salbutamol was applied and an infusion of 40 mg of methylprednisolone in 100 ml of crystalloid solution was administered. Fever was managed with an intravenous infusion of 1,000 mg of paracetamol. The blood count showed leukopenia with lymphocytosis. Elevation of inflammation markers, high

Table 1. *Laboratory characteristics of the patient*

Blood routine	
Leukocytes (x10^9 per L; normal range 4.0–10.0)	9.36
Platelets (x10^9 per L; normal range 150.0–400.0)	181.38
Erythrocytes (x10^{12} per L; normal range 3.8–5.2)	4.02
Haemoglobin (g/L; normal range 120.0–160.0)	128.46
Coagulation tests	
Activated partial thromboplastin time (s; normal range 21.0–37.0)	35.12
Prothrombin time (s; normal range 10.5–13.5)	12.8
D-dimer (mg/L FEU; normal range 0–0.5)	4.14
Blood chemistry	
Total bilirubin (μmol/L; normal range 0–25.0)	16.0
Alanine aminotransferase (μkat/L; normal range 0–1.0)	4.82
Aspartate aminotransferase (μkat/L; normal range 0–0.8)	3.26
Blood urea nitrogen (mmol/L; normal range 3.0–8.0)	10.2
Creatinine (μmol/L; normal range 62.0–106.0)	146.15
Creatine kinase (μkat/L; normal range 0.1–3.2)	7.0
Lactate dehydrogenase (μkat/L; normal range 0–4.2)	6.77
Myoglobin (μg/L; normal range 28.0–72.0)	264.9
Glucose (mmol/L; normal range 3.6–5.6)	9.0
Infection-related biomarkers	
C-reactive protein (mg/L; normal range 0–5.0)	108.1
Procalcitonin (μg/L; normal range 0–0.1)	1.91
Interleukin-6 (ng/L; normal range 0–7.0)	93.49
Ferritin (μg/L; normal range 30.0–284.0)	1004.16

D-dimers, elevation of liver function tests and signs of acute kidney injury were found (Table 1). X-ray examination of the lungs was refused by the patient, although its usefulness in diagnosing viral pneumonia and determining its extent was explained to him. Even with the thought of an increased risk of pulmonary embolism in a high-risk patient, CT angiography of the lungs could not be performed because of the patient's refusal.

Considering the patient's general condition, laboratory results, risk factors in anamnesis, use of high-dose ivermectin, and the absence of vaccination against COVID-19, hospitalization was recommended to the patient by the attending doctor. The patient was repeatedly informed about the need for treatment consisting of oxygen administration, administration of specific antivirals, corticosteroids, symptomatic treatment, and management of any complications. The patient was informed of the need to stop the self-medication with veterinary paste with ivermectin at dangerously high doses when he was taking a daily dose of 140 mg at a body weight of 115 kg. The doctor repeatedly emphasized the hepatotoxicity of ivermectin at the doses used. Despite further warnings about the risk of respiratory failure, health and life threatening, the patient refused hospitalization, claiming that the ivermectin administered in the home environment would be sufficient for treatment. The patient signed form "Leaving against medical advice" and went home with his wife.

Four days later, the ambulance service was called again to the patient's place of residence for impaired consciousness. At the scene, an unconscious man was found on the floor next to the bed in a room in the family house. The patient was cyanotic, breathing was of gasping character, and haemoglobin oxygen saturation was unmeasurable at the periphery. Haemodynamic instability was present with prolonged capillary return, tachycardia of 150 pulses per minute and blood pressure of 70/40 mmHg. Supportive ventilation was started immediately using oxygen at maximum flow. Two peripheral venous accesses were secured, 1 litre of balanced crystalloid solution was pressurized and vasopressor support with noradrenaline was also started. However, during definitive airway support, sudden circulatory failure in the form of pulseless electrical activity occurred. Cardiopulmonary resuscitation was started immediately. Repeatedly, 1 mg of adrenaline was administered intravenously every 4 minutes. However, during intubation, sudden heart failure occurred. Cardiopulmonary resuscitation was started immediately but after 30 minutes was stopped as unsuccessful.

DISCUSSION

During the COVID-19 pandemic, the often negative influence of social networks and unprofessional discussion forums became quite significant. Our patient was a member of several of these groups where he adopted ideas about the harms of vaccination. He also received information from the discussants about self-treatment of the disease. Based on this information, he started self-treatment with the antiparasitic ivermectin. This drug inhibits the replication of SARS-CoV-2 RNA in vitro. To achieve this effect, however, much higher than normal doses would be required. In addition, this drug has hepatotoxic and teratogenic effects. A meta-analysis of 24 randomized clinical trials, after data cleaning and exclusion of studies of concern, did not show statistically significant results for COVID-19 treatment with this agent (3). The National Institutes of Health in Bethesda and the European Medicines Agency in Amsterdam do not recommend the use of ivermectin for the treatment of COVID-19.

The clinical manifestations of COVID-19 in the patient during the first contact with medical professionals clearly indicated a moderate course of the disease with an immediate need for hospitalization. The patient also had several statistically significant risk factors for a more severe course of the disease (4), most notably obesity, arterial hypertension and diabetes mellitus. In addition to oxygen therapy and symptomatic treatment, we would immediately initiate remdesivir treatment for this patient with proven viral pneumonia. Early 5-day use of this antiviral agent has proved to reduce mortality in patients with COVID-19 (4, 5). The patient was aware of this fact but continued to refuse hospitalization and such treatment. Given the need for oxygen therapy, we would also administer 6 mg of dexamethasone daily for 10 days intravenously. The RECOVERY study demonstrated a statistically significant reduction in death with dexamethasone treatment according to the above regimen in patients with viral pneumonia and the need for oxygen therapy (6).

Various pathological findings are commonly encountered during laboratory examination of patients with COVID-19 disease. In particular, we monitor the levels of inflammation markers. In the case of our patient, C-reactive protein was 108.1 mg/L. Such an elevated value on the first examination increases the likeli-

hood of acute kidney injury and death of the patient (7). Elevated procalcitonin level is significantly associated with rapid disease progression and higher mortality (8). In our patient, a value of 1.9 μg/L was found. Also, acute kidney injury, which we have laboratory evidence of, is a marker of increased mortality in patients with COVID-19, as shown by data from a prospective observational multicentre study in intensive care units (9). The finding of liver enzymes elevation may be attributable to the disease itself and also to the professionally unsubstantiated use of high-dose ivermectin.

The patient refused to undergo CT pulmonary angiography, although it was necessary to exclude pulmonary embolism due to high D-dimer level (4.14 mg/L FEU), dyspnoea, hyposaturation, and risk factors. A significant elevation of D-dimers in patients with COVID-19 may indicate just thromboembolic disease or progression of a procoagulant state including endotheliitis (10). CT pulmonary angiography is also desirable in such a patient because there may not be specific signs of pulmonary embolism on the ECG recording.

According to the interview with the doctor at the outpatient clinic, the 57-year-old patient had been a member of disinformation and alternative groups on social media for some time, where he had been receiving information about the harmfulness of vaccinations, not only against the COVID-19 disease. The most common information obtained in this way is the interference of mRNA vaccines in the human genome, causing infertility, or the deployment of nanoprobes in the human body for state surveillance of individuals and groups. Unfortunately, health professionals are regularly confronted with the use of alternative self-medication in patients with infectious diseases. The downplaying of the infectious disease COVID-19 also often results in public health threats and non-compliance with isolation and quarantine measures.

CONCLUSION

COVID-19 is a disease with a moderate to severe course with an increased risk of complications and death, especially in elderly and unvaccinated polymorbid patients. Vaccination and specific antivirals are a way to reduce hospitalizations and a more severe course of the disease. In a democratic society, a patient has the right to refuse treatment in writing, after being informed of his or her condition and duly informed by a doctor, even in cases where the current state of the patient suggests a possible health deterioration with a risk of death. Our patient preferred to self-medicate based on the information found in alternative and misinformation communities. Refusal of further medical care, including hospitalization, led to respiratory insufficiency, organ failure and death at home. Immediate pre-hospital emergency care could no longer reverse this condition.

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