Medical Case Report

COVID-19 infection and hypertensive heart disease in the elderly (Clinical case study)

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Abstract:

Among the risk factors for severe course and poor outcome of coronavirus infection, hypertensive heart disease and old age are noteworthy, which is determined by the high prevalence of hypertension (30-45% in the adult population), its leading position among the causes of mortality (cause of death of 10.4 million people per year), the participation of components of the renin-angiotensin-aldosterone system in facilitating the entry of the COVID-19 virus into the body, and the high mortality rate from COVID-19 in the elderly (95% of those who died from COVID-19 in Europe were >60 years old). The analysis of the course of the new coronavirus infection was carried out in an elderly (95 years old) patient who had hypertensive heart disease as a comorbidity. The disease began acutely. COVID-19 was diagnosed on the very first day, immediately after the onset of clinical symptoms (fever, muscle and joint pain), a rapid COVID-19 test was positive, symptomatic treatment and monitoring were carried out by the family doctor. The condition worsened in dynamics, new symptoms appeared, in the form of dry cough and shortness of breath, due to which the patient was hospitalized on the fourth day of the disease. Covid-19 infection was confirmed in the clinic, complex treatment was carried out in accordance with the guideline and protocol, due to oxygenation-desaturation, against the background of which oxygenation indicators were improving. Despite the complex treatment, on the tenth day from the onset of the disease, the condition worsened due to the development of complications of Covid-19 infection (pneumonia, acute respiratory failure). Treatment continued in the general intensive care unit. Against the background of the treatment (oxygenation, breathing exercises, antibiotic therapy (Cefamed, Dominal, Steptenbakt), infusion, inhalation bronchodilators and glucocorticosteroids, sedatives, hormone therapy with dexamethasone, anticoagulants, gastroprotectors, control and correction of volemia, glycemia, electrolyte balance), the condition improved. Hemodynamic-oxygenation parameters stabilized. Disease management and rehabilitation continued at home and he recovered within 6 months. Therefore, it can be noted that despite the aggravated premorbid background, which to some extent determines the severe course of the disease and the development of complications, timely diagnosis of COVID-19 infection, positive oxygenation indicators, adequate treatment and monitoring contribute to the development of a favorable outcome of the disease. Timely and continuous rehabilitation accelerates the recovery process.

Key words: Coronavirus Infection, Pneumonia, Old age, Hypertensive Heart Disease.

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Introduction

Noncommunicable diseases, including arterial hypertension, are one of the major public health problems in all countries, as approximately 70% of deaths worldwide are caused by noncommunicable diseases.

The prevalence of hypertensive heart disease in the general adult population is 30–45%. High blood pressure (hypertension) remains the leading cause of death worldwide, accounting for 10.4 million deaths per year, since hypertension is a risk factor for cardiovascular diseases (myocardial infarction, stroke, ischemic heart disease, chronic heart failure), cerebrovascular diseases (ischemic, hemorrhagic stroke, transient ischemic attack) and is a leading risk factor for the development of kidney disease. However, the sudden emergence of an infectious disease - the new coronavirus infection - has changed established ideas about the diseases that pose the greatest threat to health. The coronavirus pandemic has affected all areas of people's lives, including health, economics, education, and psychological aspects. Due to the coronavirus pandemic, patients with hypertension are of primary concern, regarding the high rate of disease spread and components of the renin-angiotensin-aldosterone system, in the view of their role in facilitating the entry of the novel coronavirus into the body [4]. The death rate among people over 80 years of age with confirmed COVID-19 infection is five times higher than the global average [2].

More than 95% of deaths from COVID-19 in Europe occur in people aged 60 and over [5]. In the United States, 80% of deaths occurred in people aged 65 and older [4]. In China, approximately 80% of deaths occurred in people aged 60 and older [4].

According to literature data, elderly patients may often experience a latent course of infectious diseases, which is associated with a decrease in the body's resistance and which complicates the timely diagnosis of the disease [3], as a result, the start of treatment is delayed, which, along with other factors, leads to an unfavorable outcome. Based on all of the above, chronic disease in the form of hypertension and old age are risk factors for the development of a severe course and lethal outcome of COVID-19 infection.

Goal of the research: The goal of the research was to study the characteristics of the course of coronavirus infection (COVID-19) in an elderly patient with hypertensive disease, in the context of a favorable outcome.

Research material and methods. An analysis of the course of a novel coronavirus infection (COVID-19) with a favorable outcome was conducted in an elderly patient with concomitant hypertensive heart disease. The medical record of a 95 year old patient, who was being treated for a diagnosis of COVID-19 was retrospectively analyzed.

In accordance with the principles of evidence-based medicine, epidemiological, clinical, and paraclinical research methods were used to analyze the patient database.

The results of the clinical course of the infection were discussed in accordance with the existing scientific guidelines and protocols for this disease [1]. In the research process, we also used the interview method according to a pre-designed questionnaire. The respondent patient was under the supervision of a family doctor, receiving appropriate treatment and rehabilitation. The survey was conducted once every 3 months for 1 year.

The patient's personal data, which is recorded in the electronic health record system, is

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"visible". The patient gave the doctor informed consent to use her medical data for research possibilities.

Research results and discussion: Clinical case. Patient D. (Female), 95 years old, was admitted to the emergency department on the fourth day after the onset of the disease, 2021.05.10 to the emergency department of St. Michael's Hospital. Complaints: severe general weakness, easy fatigue, muscle and joint pain, dry cough, periodic episodes of shortness of breath. **Anamnezis morbi:** the disease began on 2021.10.06, acutely, with hyperthermia (t-38.2°C), muscle and joint pain. On the same day, a rapid test for COVID-19 was performed on the recommendation of the family doctor, and the new coronavirus infection was confirmed. The patient was staying at the apartment, receiving symptomatic treatment and being monitored by the family doctor. The patient's condition deteriorated over time, and complaints increased. On the fourth day after the onset of the disease, episodes of shortness of breath, a dry cough, and severe general weakness were noted, along with a subfebrile temperature, which is why he was transferred to the clinic. **Epidemiological history:** Contact with a patient with a novel coronavirus infection was unknown. The patient was unvaccinated. Among chronic diseases, the patient had hypertensive heart disease (16 years). Due to her advanced age, the patient did not fully develop symptoms of COVID-19 infection. Although the symptoms were consistent with an acute respiratory viral infection, due to the epidemiological situation, a COVID-19 infection was suspected in a timely manner, and a rapid test for COVID-19 was performed.

Objectively: The general condition was of moderate severity, consciousness was clear, communicative, the skin was pale, the oral and pharyngeal mucosa was hyperemic, the heart tones were rhythmic and moderately muffled, and on auscultation of the lungs, breathing was weak. The abdomen was soft, painless on palpation. The patient was severely oxygen-dependent, saturation was decreasing without oxygenation, and she was in a forced sitting position, requiring continuous oxygenation and monitoring. SpO2- 87% on ambient air, SpO2- 90% (with oxygenation). On 16.05.21 at 13:20, the patient's general condition deteriorated sharply. Complications of Covid infection were identified: J18.9 - pneumonia, unspecified, J96.0 - acute respiratory failure, J94.8 - other specified pleural conditions, right-sided hydrothorax. Chronic metabolic, metabolic and destructive changes in older people, changes in the activity of gene sets involved in inflammation, apoptosis, oxidative stress and immune exhaustion processes, Age-related declines in estrogen and testosterone levels are associated with increased susceptibility to COVID infection, which may be an important factor in the development of severe COVID-19.

Against the background of complex intensive treatment, the patient's general condition was steadily severe, manifested by general weakness, periodic shortness of breath, cough, hyperthermia, muscle and joint pain. T-38.2, hemodynamics stable: TA 120/65mmHg, HR-90, rhythmic. She was on spontaneous breathing, desaturating on ambient air, oxygen was delivered via nasal mask at 5-6 L/min, and inhalation therapy with bronchodilators and corticosteroids, non-invasive breathing exercises, etc. were also administered. Against this background, oxygenation indicators were improving. Atmospheric SPO2- 88%. Against oxygenation background SPO2- 95% RR-20'. Against the background of the treatment carried out (oxygenation, breathing exercises,

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antibiotic therapy, infusion, inhalation, sedative, hormone therapy, anticoagulant, gastroprotective, control and correction of volemia, glycemia, and electrolyte balance), the patient's condition has improved, and she was discharged home on the 25th day after hospitalization under the supervision of her family doctor. Upon discharge, the following symptoms were noted: general weakness, easy fatigue, periodic headaches and joint pain, and insomnia.

A follow-up chest radiograph showed positive dynamics: ground-glass opacities were detected in the left lung parenchyma in the midfield and predominantly basally, Inhomogeneous inflammatory infiltrative changes with areas of consolidation, which is an indicator of the transition of acute inflammatory foci to the next phase. She underwent both medical and physical rehabilitation at the apartment (breathing exercises, dosed physical activity), and also underwent sanatorium-resort treatment.

2.5 months after discharge, laboratory test results (complete blood count, coagulogram, C-reactive protein, D-dimer) normalized. After 6 months, chest X-ray showed no inflammatory infiltrative changes in the lungs. The patient has recovered.

Currently, the patient is 100 years old, feels well, is under the supervision of a family doctor, and due to hypertensive heart disease, he periodically undergoes clinical and laboratory tests and appropriate drug treatment.

Conclusion. Timely diagnosis and appropriate treatment of COVID infection and its complications, regardless of risk factors, can lead to a favorable outcome. In patients over 80 years of age, despite the risk of severe COVID infection, a positive response to oxygenation can be considered a positive event in terms of prognosis and survival. On time rehabilitation (medication, physical, sanatorium-resort) included in the management of COVID-19 infection can help accelerate recovery processes, even in elderly patients with risk factors.

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ხანდაზმულთა covid-19 ინფექცია და გულის ჰიპერტონული ავადმყოფობა (კლინიკური შემთხვევის ანალიზი)

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აბსტრაქტი: კორონავირუსული ინფექციის მძიმე მიმდინარეობის და არაკეთილსაიმედო გამოსავლის რისკ-ფაქტორებს შორის, აღსანიშნავია გულის ჰიპერტონული ავადმყოფობა და ხანდაზმულობა, რასაც განაპირობებს ჰიპერტონიის გავრცელების მაღალი მაჩვენებელი (ზრდასრულ პოპულაციაში 30-45%), სიკვდილიანობის მიზეზთა შორის წამყვანი პოზიცია (წელიწადში 10.4 მილიონი ადამიანის გარდაცვალების მიზეზი), რენინ-ანგიოტენზინ-ალდოსტერონის სისტემის კომპონენტების მონაწილეობა COVID-19-ის ვირუსის ორგანიზმში შეღწევის ხელშეწყობაში, COVID-19-ით სიკვდილიანობის მაღალი მაჩვენებელი ხანდაზმულებში (ევროპაში კოვიდ-ინფექციით გარდაცვლილთა 95%-ის ასაკი >60 წელზე). ახალი კორონავირუსული ინფექციის მიმდინარეობის ანალიზი განხორციელდა ხანდაზმულ (95 წლის) პაციენტში,რომელსაც აღენიშნებოდა გულის ჰიპერტონული ავადმყოფობა, თანმხლები დაავადების სახით. დაავადება დაიწყო მწვავედ. COVID-19-ის დიაგნოსტირება მოხდა პირველსავე დღეს, კლინიკური სიმპტომების (ტემპერატურის

მომატება, კუნთების და სახსრების ტკივილი) გომოვლენისთანავე, COVID-19-ს სწრაფი ტესტი იყო დადებით, ოჯახის ექიმის მიერ უტარდებოდა სიმპტომური მკურნალობა და მონიტორინგი. დინამიკაში მდგომარეობა გაუარესდა, გამოიხატა ახალი სიმპტომები, მშრალი ხველის და ქოშინის სახით, რის გამოც დაავადების მეოთხე დღეს განხორციელდა პაციენტის ჰოსპიტალიზაცია. კლინიკაში დადასტურდა კოვიდ-ინფექცია, უტარდებოდა კომპლექსური მკურნალობა გაიდლაინისა და პროტოკოლის შესაბამისად, ოქსიგენაცია- დესატურაციის გამო, რის ფონზეც ოქსიგენაციის მაჩვენებლები უმჯობესდებოდა. მიუხედავად ჩატარებული კომპლექსური მკურნალობისა დაავადების დაწყებიდან მეათე დღეს მდგომარეობა დამძიმდა კოვიდ-ინფექციის გართულებების (პნევმონია, სუნთქვის მწვავე უკმარისობა) განვითარების გამო. მკურნალობა გაგრძელდა ზოგადი რეანიმაციის განყოფილებაში. ჩატარებული მკურნალობის ფონზე (ოქსიგენაციური, სუნთქვითი ვარჯიშები, ანტიბიოტიკოთერაპია (ცეფამედი, დომინალი, სტეპტენბაქტი), ინფუზიური, ინჰალაციური ბრონქოდილატატორებით და გლუკოკორტიკო-სტეროიდებით, სედაციური, ჰორმონოთერაპია დექსამეტაზონით, ანტიკოაგულაციური, გასტროპროტექტორული, ვოლემიის, გლიკემიის, ელექტროლიტური ბალანსის კონროლი და კორექცია) მდგომარეობა გაუმჯობესდა. ჰემოდინამიკა-ოქსიგენაციის პარამეტრები დასტაბილურდა. დაავადების მართვა და რეაბილიტაცია გაგრძელდა ბინაზე და 6 თვეში პაციენტი გამოჯანმრთელდა. აქედან გამომდინარე, შეიძლება აღინიშნოს, რომ მიუხედავად დამძიმებული პრემორბიდული ფონისა, რაც რამდენადმე განაპირობებს დაავადების მძიმე მიმდინარეობასა და გართულებების განვითარებას, COVID-19-ის ინფექციის დროული დიაგნოსტიკა, ოქსიგენაციის დადებითი მაჩვენებელი, ადექვატური მკურნალობა და მონიტორინგი ხელს უწყობს დაავადების კეთილსაიმედო გამოსავლის განვითარებას. დროული და უწყვეტი რეაბილიტაცია კი აჩქარებს გამოჯანმრთელების პროცესს.

საკვანძო სიტყვები: კორონავირუსული ინფექცია, პნევმონია, ხანდაზმულობა, გულის ჰიპერტონული ავადმყოფობა.

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