Presentación de caso

The only severely-ill COVID-19 patient reported in Pinar del Río

Único paciente grave reportado con COVID-19 en Pinar del Río

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Received: 17 July 2020
Accepted: 31 August 2020
Published: 12 October 2020

Citar como: Cuello Carballo MB, Díaz Alfonso H , Ordoñez Alvarez LY. Único paciente grave reportado con COVID-19 en Pinar del Río. Rev Ciencias Médicas [Internet]. 2020 [citado: fecha de acceso]; 24(5): e4612. Disponible en: http://revcmpinar.sld.cu/index.php/publicaciones/article/view/4612

ABSTRACT

Introduction: SARS-CoV-2 (COVID-19) is a threat to global public health; with the most negative effect on patients with comorbidities and weak health status.
Clinical case: a 59-year-old, white skinned, female patient with personal pathological history of high blood pressure, diabetes mellitus type II, chronic obstructive pulmonary disease and ex-smoker with confirmed positive PCR-RT (COVID-19 carrier), presented acute inflammatory pneumopathy as a complication and satisfactory evolution. Without a precise source of infection, all contacts were isolated, they underwent to studies and resulted negative to COVID-19.
Conclusions: with this case report it is concluded that this pandemic is a challenge for the scientific community because there is not a specific treatment against SARSCoV-2. Nevertheless, Cuba makes use of its protocols of treatment where diverse medicines are included; which have demonstrated effectiveness in the control of the disease, achieving a satisfactory clinical evolution of several critical patients.

Keywords: Covid-19; Disease Transmission, Infectious; Epidemiologic Factors; Patients; Hematology; Laboratory Test; Respiration, Artificial; Tracheotomy; Intensive Care Units; Oxygen Inhalation Therapy.

RESUMEN

Introducción: la COVID-19 causada por el SARS–CoV-2 constituye una amenaza para la salud pública mundial; con mayor efecto negativo en pacientes con comorbilidades y deterioro del estado de salud.
Caso clínico: paciente femenina, de color de piel blanca, de 59 años de edad con antecedentes patológicos personales de hipertensión arterial, diabetes mellitus tipo II, enfermedad pulmonar obstructiva crónica y exfumadora con confirmación de COVID-19 por PCR-RT, presentó neumopatía aguda inflamatoria como complicación y evolución satisfactoria. Sin fuente de infección precisada, se aislaron todos los contactos, se estudiaron y fueron negativos a la COVID-19.
Conclusiones: se concluye con la presentación de este caso que la pandemia actual significa un desafío para la comunidad científica porque no existe un tratamiento específico contra el SARSCoV-2. No obstante, Cuba utiliza en su protocolo diversos medicamentos que han demostrado efectividad en el control de la enfermedad al lograr la evolución clínica satisfactoria de varios casos críticos.

Palabras clave: Covid-19; Transmisión De Enfermedad Infecciosa; Factores Epidemiológicos; Paciente; Hematología; Prueba De Laboratorio; Ventilación Mecánica; Traqueotomía; Unidad De Cuidados Intensivos; Oxigenoterapia.

INTRODUCTION

COVID-19 (Coronavirus disease 2019) is an infectious disease caused by the coronavirus SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2), the reality observed in recent months shows a considerable increase in confirmed cases and the rapid spread of the disease with a high lethality. Its origin is reported in the city of Wuhan in Hubei Province, China, in December 2019. Its main symptoms are represented by fever, cough, dyspnea and radiological findings of bilateral pulmonary infiltrates. Since then, the characteristics of the outbreak have been carefully analyzed by the international community based on reports of new cases as the epidemic progresses.[1,2,3]

COVID-19 constitutes a threat for the world public health and it affects in a more serious way people in advanced age with cardiovascular, respiratory and renal comorbidities and cancer mainly [2,3] In Cuba, the first case was diagnosed on March 13th, 2020. The Ministry of Public Health informed about three tourists from Italy who were in the city of Trinidad and after three days of stay in the country they presented respiratory symptoms.[2]

Pinar del Río, the most western province of the country notifies the first case of COVID-19 on March 19th, a female patient, coming from Belgium, who was attended and treated at the Tropical Medicine Institute until her total recovery and negativization of the RT-PCR. From this case onwards, the rest of the cases that accumulate in the territory began to be diagnosed, all of them attended up to the clinical discharge at Dr. Leon Cuervo Rubio Provincial Clinical Surgical Teaching Hospital.

During the period March-June no deaths or critical patients were reported and only one serious patient with satisfactory evolution. Given the interest it caused in the professionals who cared this case, this presentation is completed with the aim of describing the clinical, epidemiological and radiological evolution of the case.

CASE REPORT

A 59-year-old, female, white skinned, Cuban patient who was admitted to Abel Santamaria Cuadrado General Teaching Hospital in Pinar del Río with the diagnosis of acute inflammatory community pneumopathy. The patient presented personal pathological antecedents of hypertension, diabetes mellitus type II, chronic obstructive pulmonary disease and ex-smoker. Following the set of rules, she was tested for COVID-19 and RT-PCR, both negative. She was readmitted with fever of 38°C, cough with expectoration and marked asthenia. The presence of respiratory infection associated with health services was considered due to the clinical manifestations, the history of previous admission and radiological findings suggestive of pneumonia. He was treated with cefepime injections, bronchodilators and steroids and the RT-PCR test was repeated, which was positive, so she was transferred to Dr. Leon Cuervo Rubio Provincial Clinical Surgical Teaching Hospital, an institution chosen to the care of confirmed positive cases of COVID-19 in the province.

Thorax radiography was performed, reporting opacities of inflammatory aspect in the vertex, middle third and right lung base. Treatment protocol was applied with kaletra, chloroquine and interferon alpha 2b.

In the presence of muscular hypotonia, dissociation, polypnea, not cooperating behavior with the questionnaire or physical examination, with normal electrocardiogram and 100% saturation, a computerized axial tomography of cranium was indicated and a transfer to the progressive care unit was requested. She was entered the unit sleepy and unresponsive to stimuli, with isolated and crackling wheezing rales, blood pressure of 160/90mmHg and normal CT scan corresponding to her age. She quickly recovered, was conscious, oriented, cooperative, without motor deficiency and 99 % saturated.

The following diagnoses were made: COVID-19, acute inflammatory pneumopathy associated to health services (nosocomial) with an unspecified germ, exacerbated chronic obstructive pulmonary disease, severe hypoglycemia index which was treated and improved, untreated hypertension and decompensate type II diabetes mellitus.

The indicated triad was maintained in the ward, change of antibiotic for Piperazam and azithromycin and introduction of parenteral hydration, fraxiparine, slow insulin, omeprazole, vitamin B1, B6, B12, C, folic acid, methylprednisolone, salbutamol and budesonide spray and aerosol.

Evolving adequate levels of consciousness, spontaneously ventilating, hemodynamic stability, with supplemental oxygen by mask at the beginning which was later withdrawn, normal diuresis, afebrile, with hypoglycemia in several occasions, forcing the readjustment of insulin doses until achieving an acceptable glycemic index without correction. Radiologically, the inflammatory lesions improved, which were concentrated in the upper lobe of the right lung, until normal chest radiography was shown according to age and history.

The laboratory tests were kept in acceptable parameters except for potassium, which declined in an initial stage of her stay in therapy and liver enzymes were altered (TGP: 275 U/L and TGO: 293 U/L) which translates into reactive hepatitis secondary to anti COVID-19 treatment. Given the clinical and radiological improvement, the patient was transferred to the ward, the glycemic index improved, and the insulin along with the rest of the other medications were suspended, leaving only the triad and the gastric mucosa protector, in addition to the treatment for the basic diseases.

In addition to medical care for the patient, focus control actions were carried out in the health area, achieving RT-PCRs for all contacts without infecting any of them, and in this case the source of infection was not specified.

The patient was re-admitted with a picture of semi-pasty diarrhea and a history of having "eaten crab" the previous day, normal complements, chest Rx with signs of pulmonary emphysema and negative RT-PCR. Asymptomatic since admission, she was discharged with the same characteristics.

COVID-19 pandemic represents an unprecedented challenge given the rapid rate of scientific discovery and clinical data generated by the growing number of people infected. Research to find an effective treatment began in January 2020, however, despite the many vaccines in development, a reliable candidate is not expected until 2021.[4] The Chinese Center for the Disease Control and Prevention began testing the effectiveness of some pre-existing treatments for pneumonia in patients with COVID-19 in late January, but they are still experimental treatments. [5]

All countries have created their own treatment and action protocols for this disease. In Cuba, the National Strategic Plan to deal with COVID-19 was designed in January 2020, which is constantly updated and involves all the Central State Administration Agencies, State Enterprises, Private Sector and the population in general.[6] The authors of this case report agreed that there is currently no specific treatment for COVID-19 that has demonstrated high rates of effectiveness; however, according to the pathophysiogenesis described to date regarding this virus and previous experiences in the outbreaks of SARS-CoV and MERS-CoV, medicines can be used to directly intervene on the phases of viral replication.[5]

So far, no fully effective antiviral drug or vaccine has been identified, consequently the triad protocol in the country is the most effective measure to prevent and/or impede the viral replication which is demonstrated in clinical practice.

Chloroquine is involved in the evolution of COVID-19 pneumonia by improving pulmonary imaging findings, promoting negative conversion to the virus and shortening the course of the disease.[7] It has been used successfully and has given effective results together with other drugs, always having in mind the contraindications for its use and the possible adverse reactions and potentially serious side effects such as retinopathy, hypoglycemia, arrhythmias and cardiomyopathy which explains the decompensation of diabetes mellitus in this patient. It has some immunomodulator effects through suppression of the release of tumor necrosis factor and IL-6, which may help to prevent the cytokine storm that leads to rapid deterioration of patients with COVID-19.[8]

Kaletra is a combination drug that is used in fixed doses for the treatment and prevention of HIV/AIDS. The rationale for use is based on in vitro and animal model studies showing potential activity for SARS-CoV and MERSCoV; because Lopinavir and Ritonavir can bind to M-pro, a key enzyme for coronavirus replication, suggesting that it can suppress coronavirus activity. Early reports of Lopinavir / ritonavir for the treatment of COVID-19 are mostly case reports and small retrospective, non-randomized cohort studies, making it difficult to determine the effect of direct Lopinavir / ritonavir treatment.[9]

The authors consider that although a late starting of treatment may partially explain some ineffectiveness of kaletra for the treatment of COVID-19, it cannot yet be established with certainty whether it is a specific or ineffective therapy because clinical trials are ongoing. But current data and experiences in the health care setting and clinical improvement of patients

suggest an effective role for this drug in the treatment of COVID-19. In Cuba, the protocol is based on international experiences, such as China, where it is used for a period of 30 days.[6]

Azithromycin is an antibacterial macrolide that prevents bacterial super infection and has immunomodulator properties such as regulation of inflammatory responses, reduction of nuclear polymorphous neutrophil (PMN) chemotaxis to lung tissue by inhibiting cytokines (IL-8), inhibiting hypersecretion of mucus and accelerating neutrophil apoptosis. In combination with chloroquine, it could be an effective alternative in the treatment of patients with SARS-CoV-2 infection, and this is demonstrated by its presence in the Cuban protocol.[10]

Interferon means that it interferes with viral multiplication. When interferon is administered to an individual, it acts immediately, and if not, it generates mechanisms that facilitate the antibody. If it is managed to be kept in the blood properly, a very effective level of response to the virus is usually obtained. Interferons α and -β have been studied for coronavirus treatment; demonstrating in the latter the activity against MERS. In the Cuban protocol, Interferon alpha-2b is applied as therapy in the intensive care units (3 million units, intramuscularly, in alternate days, for one month).[11]

Patients who present viral infection are at risk of developing sepsis associated with multiple-organ failure that is well established as one of the causes of disseminated intravascular coagulation, given that when monocytes and endothelial cells are activated they begin to release cytokines after the injury, and then coagulation disorders occur. Therefore, the prophylactic use of fraxiparine is recommended, which is applied according to the presence or not of major factors of thrombosis, creatinine clearance and the weight of the patient.[12]

The diagnosis of respiratory sepsis associated with health services in this patient is not possible to demonstrate when there is no evidence by microbiological tests where a germ has been isolated in the hospital and taking into account that this entity is the most frequent complication of COVID-19.

CONCLUSIONS

It is concluded with the report of this case that the current pandemic means a challenge for the scientific community because there is no specific treatment against SARSCoV-2. Nevertheless, Cuban protocol of treatment includes diverse medicines that have proven effectiveness in the control of the disease, achieving a satisfactory clinical evolution of several critical cases.

Conflicts of interest
The authors declare that there is no conflict of interest.

Author's contribution
All authors worked: in the conceptualization and design of the clinical case, in data collection and the statistical process as well as in the analysis and writing of the final version.

Funding
The authors did not receive any funding for the development of the study.

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