



SEVERE PNEUMONIA DUE TO COVID-19: EXPERIENCE OF A CASE

Paola Alejandra Pillajo Vinueza

MD. General Practitioner at "Selsivert. S.A ,Ecuador.

Miguel Angel Alvarado Naranjo*

Medical Resident at Hospital Basico Guamote,Ecuador. *Corresponding Author

Paul Alejandro Yanez Piedra

Medical Resident at Hospital de Especialidades de las Fuerzas Armadas, Quito-Ecuador.

Fanny Maribel Cauja Miranda

Medical Director Social Security Peasant Chillanes, Ecuador.

Maria Belen Paucar Valdivieso

Medical Resident at Hospital Universitario Andino Chimborazo, Ecuador.

ABSTRACT

The cause of Covid-19 is a newly emerging coronavirus, called SARS-CoV-2, which was first identified in Wuhan, China in December 2019. Its genetic sequencing indicates that it is a closely related betacoronavirus. the cause of severe acute respiratory syndrome (SARS-CoV). The coronavirus belongs to the Coronaviridae family; Six types of disease have been identified in humans: four of them cause mild respiratory symptoms, while the Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS) are pandemic, potentially serious lung involvement and death. Covid-19 is currently expanding worldwide and has already become a pandemic.¹

In Ecuador, the first case was detected on February 29, 2020; Ecuador currently exceeds 80,000 confirmed cases of Covid-19 and more than 5,000 deaths. Intensive care units exceed their usual capacity in most Ecuadorian provinces.²

We present the fifteenth patient admitted and treated in our unit and the third patient to be discharged. We have designated this patient, despite not assuming a management that is out of the ordinary, it is a prototype patient of pneumonia acquired in the severe community affected by the new coronavirus. Pneumonia that we have not faced until now and that we are forced to manage en masse.

Objective: Describe from a clinical and radiological point of view, how the new coronavirus can end in severe pneumonia, from the presentation of a clinical case, to help quickly identify patients with symptoms compatible with Covid-19 and avoid a poor prognosis.

Methodology: This is a systematic review of severe pneumonia due to Covid-19 infection, emphasizing its clinical and radiological characteristics.

KEYWORDS : Severe Pneumonia, Covid 19, Older Adult

INTRODUCTION

The current outbreak of the new coronavirus disease or COVID-19 (acronym that comes from the English coronavirus disease) arose in the Chinese city of Wuhan, a metropolis of 11 million inhabitants in the province of Hubei, where the local authorities initially referred an unknown origin of the outbreak, but which was later related to a large live animal and seafood market in that city. The first information received by the WHO office in China on a series of 27 cases of pneumonia "of unknown etiology" took place on December 31, 2019, and the virus in question was identified as the cause on January 7; Three days later, Shanghai scientists published complete genomic data on the new coronavirus, whose preliminary analyzes suggested some amino acid homology to SARS-CoV, according to which it may be able to use the ACE2 protein as a receptor, with important implications for the time. of predicting its potential to generate a pandemic.^{3,4,5}

The trajectory of this outbreak was impossible to predict, and despite the implementation of classical public health strategies in many countries, the who emergency committee declared it on January 30 as a Public Health Emergency of International Importance. (ESPII), that is, an extraordinary event that constitutes a risk to the Public Health of other States due to the international spread of a disease, which may require a coordinated international response⁶.

Coronaviruses (CoV) constitute a broad group of viruses that are taxonomically within the Orthocoronavirinae subfamily

within the Coronaviridae family (order Nidovirales); All species belonging to four genera: Alphacoronavirus, Betacoronavirus, Gammacoronavirus and Deltacoronavirus are designated under the term coronavirus. They are spherical (100-160 nm in diameter) and enveloped viruses, the genome of which consists of a single strand of RNA with positive polarity (+ ssRNA, English singlestranded positive-sense RNA) and approximately 30,000 base pairs. (between 26 and 32 kilobases); it features a methylated hood at the 5' end and a polyadenylated (poly-A) tail at the 3' end that closely resembles host messenger RNA.⁷

Once in our body, SARS-CoV-2 infection activates the innate immune system, generating an excessive response that could be related to greater lung injury and worse clinical evolution. If that response fails to effectively control the virus, such as in older people or other immunosuppressed patients, the virus would spread more efficiently, causing lung tissue damage, which would activate macrophages and granulocytes and lead to the massive release of pro-inflammatory cytokines from CD4 + T helper lymphocytes, especially IL-6 and GM-CSF (granulocyte-macrophage colony stimulating factor). However, this hyperactivation - known as cytokine release syndrome (SLC) or cytokine storm, and associated with a greater severity of the disease - is insufficient to control the infection and leads to lymphocyte depletion leading to greater tissue damage. It is also associated with acute respiratory failure syndrome or Adult Respiratory Distress Syndrome (ARDS), which has been described as the main cause of

mortality from Covid-19.^{8,9}

For all of the above, we present a clinical case of an elderly adult patient with multiple comorbidities infected with the new coronavirus, the same one that led to a critical situation, however, after multidisciplinary management, hemodynamic control was achieved.

CLINICAL CASE PRESENTATION

This is a 65-year-old patient born and residing in Quito, an informal merchant by profession, with a history of chronic kidney disease 5 years ago in renal replacement therapy, high blood pressure and type 2 diabetes mellitus, both controlled, he attended the emergency department Hospitals on May 28, 2020, affected by symptoms based on cough with yellowish expectoration in moderate quantity, thermal rise of 39 degrees Celsius, asthenia and myalgias of 4 days of evolution. In the Emergency Department, he did not present any notable clinical-analytical-radiological findings, so he was discharged, with warning signs and paracetamol-based medication, 1 gram every 8 hours.

At home, the patient shows worsening of his respiratory symptoms, with the appearance of dyspnea on small exertions, which is why he goes to the emergency department of our hospital three days later.

When evaluating it, I present an ambient air saturation of 86% that goes back to 90% with 2 liters per nasal cannula, a blood pressure of 130/70 mmHg, respiratory rate of 24 breaths per minute, heart rate of 103 beats per minute, the patient was he was in fair general condition, disoriented in all three spheres, with finding of bilateral pneumonia and positivity for COVID-19 PCR in nasopharyngeal swab. (Photo 1)

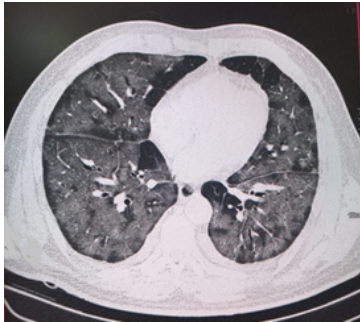


Photo1: Simple chest tomography: diffuse ground glass in both lung fields

Extension tests were performed, aiming at: Leukocytes: 21,000, Neutrophils: 90.5%, Lymphocytes: 600, Hemoglobin: 13.5g / dl Hematocrit: 38.5%, Platelets: 332000, D-Dimer: 745, Sodium: 136 Potassium: 4.37.

It was decided to be admitted for comprehensive management in the internal medicine service, however, the patient presented frank respiratory failure with saturations of up to 76% despite the use of oxygen at high flows with FIO₂ 85%, due to this the unit service was consulted intensive care where he was transferred after endotracheal intubation; he was admitted with a diagnosis of severe hypoxic respiratory failure; In this service, treatment based on lopinavir / ritonavir is started, and due to bacterial superinfection, ceftriaxone was indicated (7/7), however, due to stationary evolution, it was decided to rotate a carbapenem antibiotic (Meropenem 10/10). After complete suspension of antibiotherapy, new control examinations were decided, showing 10,000 leukocytes, 60% neutrophils, blood cultures, urine culture, pulmonary aspirate, negative catheter culture. It showed a thermal rise maintained around 38.2 °C the first 6 days, for which it was controlled with metamizole.

Currently the treatment directed towards the coronavirus has undergone modifications; for this reason, this patient received the initial protocolized treatment. From his admission to the ICU, the patient is pronated, with improved oxygenation. In control tomography, lung damage reduction was targeted. (Photo 2)



Photo2: Simple chest tomography: Ground glass of peripheral distribution.

The patient evolves favorably from the clinical and radiological point of view. Due to the high demand for care, it was decided to perform a percutaneous tracheostomy without complications.

The patient is discharged with a closed tracheostomy, which is managed to open sporadically due to clear abundant bronchorrhea, and I also have severe polyneuropathy, the same one that remains in rehabilitation.

DISCUSSION

The new SARS-CoV-2 coronavirus is the seventh member of the Coronaviridae family known to infect humans. The mortality rate of Covid-19 so far is lower than that of SARS or MERS coronavirus diseases; however, SARS-CoV-2 is highly infectious and could be a major health threat.¹⁰

In this study, the predisposing conditions for developing severe Covid-19 pneumonia tended to be adulthood and medical comorbidities (chronic kidney disease, high blood pressure, and type II diabetes mellitus), these diseases predisposed our patient to end in an intensive care unit and also a bacterial superinfection; it was managed according to the standardized protocol, this section is still under debate in the case of coronavirus pneumonia. It is for this reason that it leads us to document our exposed case.

CONCLUSION

Older adults, males, underlying comorbidities, and progressive radiographic deterioration on follow-up computed tomography are known to be risk factors for a poor prognosis in patients with Covid-19 pneumonia.

Our case fulfilled all these characteristics that led to a critical scenario, however, after comprehensive management, clinical improvement was achieved.

Finally, infection with this new coronavirus continues to increase, and Latin America is being the most affected; the epidemic behavior worries internationally, an increase has been generated in the scientific evidence regarding this disease even with many questions to answer. As there is no specific treatment at this time, prevention and control measures should continue.

Conflict Of Interest

The authors of the article have no conflict of interest.

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