



EARLY PREDICTING LYMPHOPENIA OF SERIOUS INFLATION PNEUMONIA COVID-19: CASE PRESENTATION

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ABSTRACT

Coronaviruses are common viruses in many species of animals such as cows, camels, cats and bats, some have the ability to transmit from animals to people, producing symptoms that range from the common cold to more serious pathologies. The new coronavirus is called SARS-CoV2, the disease is called Corona Virus Disease 2019 = COVID-19. It is a new type of coronavirus that can affect humans, discovered in December 2019 in Wuhan, China. The existing bibliography tells us as a main risk factor the antecedent of arterial hypertension (HT), and the presence of lymphopenia as a predictor of poor prognosis.¹ We present the case of an older adult patient with a history of controlled HT, who, after exposure in a shopping center, presented respiratory symptoms based on cough without expectoration, and myalgias; He goes to a specialized hospital where they carry out extension studies, highlighting lymphopenia and nasopharyngeal swab: SARS-COV-2 Positive PCR in addition to ground chest pattern tomography in ground glass without response to the prescribed treatment; due to type I respiratory failure, he was transferred to the intensive care unit, where he presented complications: pneumonia associated with mechanical ventilation, apical laminar pneumothorax, and lung abscess in the middle lobe, carrier of a tracheostomy, with poor response to clinical management, evolved unfavorably and died.

Objective: Early recognition of the immune phenotype of lymphopenia in patients with COVID-19 infection, to help quickly identify serious patients and avoid a poor prognosis.

Method: This is a systematic review of lymphopenia as an early predictor of severe pneumonia due to COVID-19 infection, emphasizing its clinical and radiological characteristics.

Conclusion: Coronaviruses are a wide family of viruses that can cause various conditions, from the common cold to more serious diseases, as is the case of our patient, who came with symptoms of COVID-19 infection and the finding in lymphopenia tests made that he had a poor prognosis due to the complications that led to his death.

KEYWORDS : Pneumonia, COVID-19, lymphopenia.

INTRODUCTION

COVID-19 is produced by SARS-CoV-2, an unknown Betacoronavirus that measures between 60–140 nm. Initially a zoonosis from wild animals, currently with human-to-human transmission. Its start seems to be identified in the month of December 2019 in Wuhan, China. This virus is linked to angiotensin-converting enzyme type 2 receptors, with an affinity 10 to 20 times greater than SARS-CoV. Today SARS-CoV-2 seems to be transmitted by contact, drops, fomites, with increasing evidence that also proposes a fecal-oral transmission in addition to aerosols.

nasal mucosa arises two days after the onset of symptoms. However, a significant viral load has been manifested in asymptomatic patients and there are clear reports of transmission in asymptomatic patients. The case fatality rate varies according to the area, varying from 2% to 4% on average.⁽²⁻³⁾

80% of the cases usually present with mild symptoms, 20% of the cases presented pneumonia with a hospital admission requirement and of this 20%, a quarter of patients, up to 5% of the total, will require an intensive care unit with need mechanical invasive ventilation (VMI)⁽⁴⁻⁵⁾

Recent literature suggests that the peak of viral load in the

METHODOLOGY

This is a systematic review of lymphopenia as an early predictor of severe pneumonia due to COVID-19 infection, emphasizing its clinical and radiological characteristics.

The information and images obtained belong to the medical personnel in charge of the case whose reinforcements rest in the statistical package Excel, Word and JPG.

PRESENTACION DE CASO

This is a 68-year-old male patient, resident in Pichincha, Ecuador, a retired military profession, with a history of controlled hypertension. Whoever presented a 5-day clinical history of dry cough accompanied by an unquantified thermal rise, and headache with apparent cause exposure in a super market, self-medicated paracetamol and loratadine, when symptoms did not yield, he went to the hospital.

Upon arrival at the Pneumology service, a chest x-ray is performed (photo1-2)

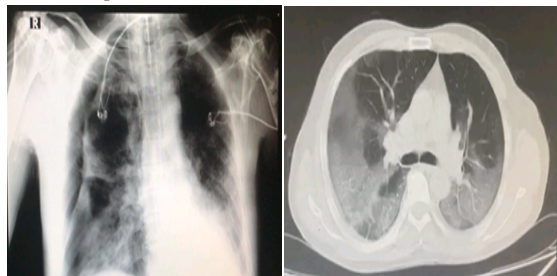


Foto1-2: Chest X-ray and Simple chest TC: subpleural ground

Leukocytes: 8,060, Neutrophils: 71.5%, Lymphocytes: 600, PCR: 31.14, Hemoglobin: 13g / dl Hematocrit: 37.5%, Platelets: 334000, Glucose: 121 mg / dl, Creatinine 0.6 mg / dl, Urea : 17.4 mg / dl, D-Dimer: 697, Sodium: 128, Potassium: 3.37, Chlorine: 92, Nasopharyngeal swab: PCR Positive SARS-VOC-2.SARS-COV- 2.

Due to nonspecific respiratory symptoms associated with lymphopenia and bilateral interstitial infiltrates, a positive SARS-COV-2 PCR diagnosed COVID-19 pneumonia, treatment with regimen (ceftriaxone, azithromycin, hydroxychloroquine 5/5), (lopinavir / ritonavir 10/10).

During hospitalization, he presented signs of type I respiratory failure, for which a simple chest tomography (photo 2) was requested, in order to identify characteristic findings of COVID-19 infection.

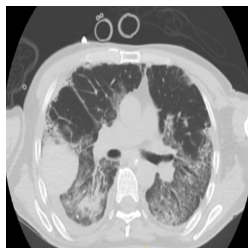


Photo 3: Chest x-ray: Peripheral and subpleural frosted glass pattern, in multiple lobes with bilateral basal predominance with a tendency to basal consolidation plus perihilar and bibasal bronchiectasis

Due to a higher oxygen requirement, he is transferred to the intensive care unit, where IMV is started, due to severe Berlin Acute Respiratory Distress syndrome, and patient pronation is also performed, thereby improving lung static pleasure, as well as reducing fraction Inspiratory oxygen, despite this, still maintains high ventilatory parameters.

Jointly patient with abundant mucopurulent orotracheal secretions and fever 38.9 C for what is classified as Pneumonia Associated with late mechanical ventilation, for which they add a double antibiotic scheme based on carbapenems, aimed at results of tracheal aspirate culture (enterococcus faecalis, candida albicans and multisensitive staphylococcus epidermidis). Due to difficult weaning from prolonged mechanical ventilation, a percutaneous tracheostomy is performed.

Due to stationary evolution, a chest tomography was performed (photo 3), suggesting findings suggestive of late-stage covid-19 plus added pneumonia, therefore they placed a chest tube, appreciating the outflow of purulent material approximately 800 cc. Subsequently, the patient presented diaphoresis, tachypnea, use of accessory muscles with gasometry, respiratory acidosis, patient suffered cardiorespiratory arrest, without favorable response to resuscitation maneuvers, and died.

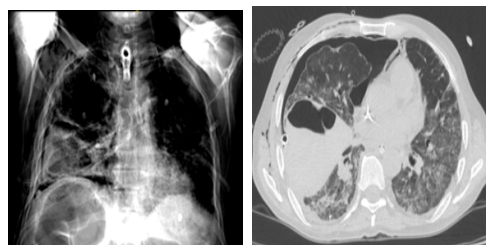


Photo 4-5: TC Simple chest: ground glass opacity (paved) and consolidated, basal, bilateral, apical pneumothorax, in the right lung field and lung abscess at the middle lobe level

DISCUSSION

The presence of COVID-19 was reported in late 2019 in Wuhan, China, and since then the infection has spread considerably worldwide. In our country Ecuador we are in a state of sanitary emergency, the cases are increasing day by day, since we are in phase 3 of the pandemic considered as community contagion. At the time of this clinical case (April 2020), there are a total of 31,000 confirmed cases of covid-19 in Ecuador and 1,569 deaths. There are many uncertainties regarding the natural history of the disease, surrounding sources, transmission mechanisms, the dispersal capacity of the virus, and the persistence of the virus in the environment and fomites.

The documented risk factors speak of high blood pressure as the most significant for developing the disease, followed by obesity and diabetes mellitus.

Ages between 20 and 40 years are the age group with the most cases of COVID-19, in addition to being predominant in males.⁽⁶⁻⁷⁾

The clinic is generally related to the upper airway and is mild, similar to those of a common cold in early stages. Among the most frequent symptoms are fever, asthenia, dry cough, at intervals of sputum production, myalgia, dyspnea, also gastrointestinal symptoms may coexist. In the analysis lymphopenia occurs in most cases, in addition to prolonged times. Imaging examinations such as chest tomography reveal patchy infiltrates, ground glass.⁸

The estimated time from the first symptom to the progress of pneumonia (confirmed by image) is approximately 5 days; until the subsequent hospitalization 7 days, to develop respiratory distress syndrome are 8 to 9 days and 9.5 to 10.5 days until admission to an ICU. The most frequent complications during hospitalization are: respiratory distress syndrome, heart failure, kidney

damage, liver dysfunction and shock.⁹

A poor prognostic factor is lymphopenia, being persistent in severe patients, this is a factor to take into account at the time of assessment and treatment provision, since those who present it are at greater risk of opportunistic complications and infections.

Regarding treatment, there is currently no approved drug against COVID-19, however, the treatment scheme is based on experiences from other countries such as China, Spain, the USA and Italy, manifesting benefit in many cases, and optimizing the patient prognosis; among some medications such as Hydroxychloroquine, Azithromycin, Lopinavir / Ritonavir, taking into account its adverse effects at the cardiac level.¹⁰

Our clinical case fulfilled some aspects, among them: male sex, having high blood pressure and lymphopenia in laboratory tests, the same that was a factor that made the patient end up with complications. That is why we have been able to verify in this case the patient's clinical and evolution depends on the existence of lymphopenia, it shows us that it is the fundamental key to avoid a bad prognosis.

CONCLUSION

Covid-19 has infected more than 3.5 million people worldwide, while the number of deaths worldwide exceeds 255,000 and that of those recovered, one million.¹¹ In Ecuador the numbers are increasing, surpassing until the end of April the 30,000 confirmed cases.¹² It has undoubtedly been a global impact of great health and economy.

We document in this article a patient where lymphopenia was a decisive marker, since this led to multiple complications, which could not be overcome.

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