Journal of
Virology and Infectious Diseases

ScienceAssist International

Review Article | Open Access

SARS COV2, Emerging, Reemerging and Potentially Emerging Diseases in Argentina

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Received: March 12, 2021; Accepted: March 31, 2021; Published: April 07, 2021

Abstract

The SARS COV2 (COVID 19) pandemic has become a tremendous challenge to mankind. In our Country, this pandemic gets associated to other emerging, re-emerging and potentially emerging diseases, which means an augmented risk, as it requires from Internists, Pediatricians and Infectologists to be well acquainted with all those illnesses, their similarities, differences and differential diagnosis and treatment. In the brief list below, we summarize these diseases.

INTRODUCTION

Brief History of SARS CoV2 (Covid 19)

At the end of December 2019, the incidence of atypical pneumonia of unknown cause was reported in the Chinese city of Wuhan.

PCR (Polymerase Chain Reaction) studies found a coronavirus, which was> 85% similar to a SARS-like CoV of bats (bat-SL-CoVZC45).

This species was initially named nCOV19 and later renamed SARS-CoV-2 due to its structural similarity with the homonymous species.

Its origin is still uncertain, and is the subject of many conjectures.

The early association identified between SARS-CoV with SARS-CoV-2 was supported by the analyzes made later to the protein S (spike) that characterizes these two viruses, where an important similarity in these transmembrane structures was made clear, making them practically superimposable with each other.

What distinguishes them is a furin-binding domain in the SARS-CoV-2 protein S, which expands the tropism and increases virus transmission, compared to the 2003 SARS-CoV.

Studies on SARS-CoV proteins have revealed a potential role for IMPα / β1 during infection in the signal-dependent cytoplasmic nucleus closure of the SARS-CoV nucleocapsid protein, which can affect host cell division.

The predilection and competitiveness of the virus over the ACE2 and TMPRSS2 cell receptors has already been demonstrated, and its subsequent need for the importin described above is also confirmed [1].

These functional receptors are found in multiple tissues, including lung alveolar epithelium, arterial and venous endothelium, smooth muscle, renal tubular epithelium, oropharyngeal mucosa, and small intestine epithelium, largely explaining the clinical presentation of COVID-19 patients.

This also explains the higher incidence of severe symptoms in patients with over-expression of TMPRSS2 receptors (androchronogenetic alopecia, prostatic hyperplasia, etc.), and the predilection of the virus for establishing its first replication site in salivary glands (these contain more receptors TMPRSS2 than ACE2) [2].

However, it is unavoidable to bear in mind that the clinical forms of the infection are due to two processes triggered by the virus: hyperinflammation and hypercoagulability.

Both originate from endothelitis caused by COVID 19, which results in cytokine storm (in relation to hyperinflammation), and alteration of Virchow's triad (in relation to hypercoagulability) [3].

To seek an effective treatment that is exclusively oriented to antivirals is to ignore the pathophysiology of SARS

COV2, and to appeal to the utopian "silver bullet", instead of reorienting the therapy with a synergistic and coadjuvant criteria.

HOW MANY COVID CASES ARE THERE REALLY IN ARGENTINA?

In order to answer that question, we must start from official data.

As of today (03/10/2021), the total number of confirmed cases throughout the country amounts to 2,250,000 and fatalities total 52,000.

Based on data from The Lancet journal, it is deduced that less than 50% of those infected will know about their condition, as they are asymptomatic or oligosymptomatic [4].

Likewise, the Argentine Authorities have publicly acknowledged that it is not being tested as much as it should.

It follows that-in Argentina-only 1/3 of the people consult (and much less, in the samples taken at random); they will be tested and-therefore-confirmed.

From both facts, it is concluded that-following the current work methodology-only less than 30% of the cases will be confirmed.

Therefore, if there are 1,450,000 confirmed cases, the reality must be a number close to 4,000,000 infected people.

The serious things about these figures is that the asymptomatic, presymptomatic, oligosymptomatic, does not confirmed and/or awaiting confirmation, are as contagious as the rest. Similarly, in Spain it was observed that the number of deaths from COVID had a major underreporting, according to a reliable data collector: funeral homes.

This stems from the incongruity between the expected death rate by region and by year (a statistical data based on multiple retrospective variables), and the one actually found. The highest number obtained is called Excess Deaths.

The excess of deaths-in the countries initially hit by the pandemic - has implied no less than 50% of total deaths.

In Spain, funeral homes reported thousands of cases of bodies from geriatric institutions, nursing homes, hospices, etc., which were included in "natural death" (because there had been violence), but without specifying the causes that ended in death.

"Non-traumatic cardio-respiratory arrest" is the medico-legal name used in all these cases.

It has been speculated that the underreporting reached 50% of COVID deaths.

It should be understood that deaths were not overlooked, but the real cause of them: pneumonias due to COVID, cerebrovascular accidents due to COVID, acute renal failure due to COVID, catastrophic antiphospholipid syndrome due to COVID, disseminated intravascular coagulation due to COVID, etc.

Applied to our Country, it could be inferred that deaths from COVID, to date, would amount to approximately 78,000. All of the above has two readings.

On the one hand, that the infectivity of the virus is much greater than it is supposed; likewise, that the underreporting is much larger than is evident.

CONCEPT OF EMERGING, RE-EMERGING AND POTENTIALLY EMERGING DISEASES

An emerging infectious disease is one caused by a recently identified and previously unknown infectious agent capable of causing public health problems at the local, regional or global level [5] (Table 1).

Re-emerging diseases are defined by the reappearance and increase in the number of infections of an already known pathology that, due to the few cases registered, was no longer considered a public health problem, but which cause an alarming return [6].

Finally, the denomination of "potentially emerging" is proposed to all those nosological entities for which-although they are considered "exotic" and there are currently no confirmed cases-the conditions for their appearance are given: climate change, presence of vectors adequate, socio-sanitary predisposition, frequent trips, etc.

All the above nosological entities have in common an imbalance in the man-domestic species-fauna interrelation, generating situations that threaten the health and well-being of the three populations involved [7].

Human activities and environmental disturbances have created new patterns for infectious diseases, favoring the spread of pathogens between different species and previously uncorrelated geographic areas.

New social trends such as the acquisition of exotic species for pets, food products from wild animals and plants or ecotourism contribute to their development and propagation.

Regarding food consumption, the terms "free of pesticides" should not be confused with "lacking in phytosanitary controls".

Table 1: We outline-below-a list with the pathologies. Despite its being a succinct enumeration, we emphasize the imperative need to know the differential diagnoses, the form of confirmation, and their eventual therapeutics.

AGENT	CLASSIFICATION	DISEASE	E / RE / PE
VIRUS	Arenavirus	Argentinian Hemorragic Fever	RE
VIRUS	Arenavirus	Chapare	PE
VIRUS	Hantavirus	Hantavirus	E
VIRUS	Flavivirus	Dengue	RE
VIRUS	Flavivirus	Yellow Fever	RE
VIRUS	Flavivirus	Zica	E
VIRUS	Togavirus	Chikungunya	E
VIRUS	Flavivirus	West Nile Encephalitis	PE
VIRUS	Rhabdovirus	Rabies	RE
VIRUS	Filovirus	Ebola	PE
VIRUS	HIV	AIDS	RE
VIRUS	Herpesvirus	Dissemitnated Herpes simplex	RE
VIRUS	Paramyxovirus	Hemorrhagic measles	RE
VIRUS	Ribovirus	Flu	RE
VIRUS	Paramyxovirus	Nipah	PE
VIRUS	Paramyxovirus	Hendra	PE
VIRUS	Poxvirus	Smallpox	PE
BACTERIA	Escherichia	Hemolytic uremic syndrome	E
BACTERIA	Lestospira sp	Leptospirosis	E
BACTERIA	Salmonella	Typhoid fever	RE
BACTERIA	Corynebacterium	Diphtheria	RE
BACTERIA	Bordetella	Whooping cough	RE
BACTERIA	Mycobacterium	T.B.	RE
BACTERIA	Vibrio	Colera	RE
BACTERIA	Legionella	Legionelosis	E
BACTERIA	Borrelia	Lyme´ disease	E
BACTERIA	Helicobacter	Gastric Ulcer	E
BACTERIA	Chlamydia	Psittacosis	RE
BACTERIA	Brucella	Acute brucellosis	RE
BACTERIA	Micobacteriae	Landouzy typhobacillosis	RE
BACTERIA	Meningococo	Acute meningococcemia	RE
BACTERIA	Treponema	Herxeimer in Syphilis	RE
BACTERIA	Mycobacterium	Leprosy syndrome	RE
BACTERIA	Cocos	Sepsis by Gram –	RE
BACTERIA	Pasteurella	Bubonic plague	PE
BACTERIA	Bacillae	Anthrax Inhalation anthrax	RE
BACTERIA	Campylobacter	Food poisoning	RE
PARASITE	Plasmodium	Malaria	RE
PARASITE	Strongyloides	Estrogyloidiasis	RE
PARASITE	Tripanosoma	Acute Chagas	RE
PARASITE	Entamoeba	Acute amebiasis	RE
PARASITE	Triquinella	Trichinosis	RE
PARASITE	Toxocara	Larva migrans	RE
PARASITE	Taenia	Cysticercosis	RE
PARASITE	Cestoda	Hydatidosis	RE
FUNGI	Cryptosporidium	Cryptosporidiosis	RE
FUNGI	Blastomices	Blastomicosis	RE
FUNGI	Histoplasma	Histoplasmosis	RE
CA	Combined Agents	Erythema polymorphous	RE
CA	Combined Agents	Kawasaki´s Disease	RE
RE: reemergent E: emergent PE: potentially emergent CA: combined Agents			

Likewise, the growing conditions of impoverishment, overcrowding, lack or fear of accessing health systems, and self-medication (folkloric or induced by the media), favor the serious situation.

In the same way, bioterrorism must be taken into account because it leads to the resurgence of diseases that are now considered eradicated, such as smallpox [8].

In humans, more than 1,415 pathogens are known, of which 868 species are zoonotic (61%), and 80% of the latter have the capacity to affect different species of animals [9].

The control of zoonoses is a highly complex process, and each case needs to be approached differently.

We outline-below-a list with the pathologies.

Despite its being a succinct enumeration, we emphasize the imperative need to know the differential diagnoses, the form of confirmation, and their eventual therapeutics.

MATERIAL AND METHODS

Surgical Procedure

Prone position, asepsis and antisepsis, longitudinal linear incision in posterior aspect of left thigh, interfascial dissection, localisation of common sciatic nerve dependent tumour, continuous neurophysiological monitoring, proximal and distal electrode placement on sciatic nerve, mapping with bipolar stimulator during resection. Extracapsular tumour dissection, fascicle-dependent tumour mapped and silent, complete enbloc resection.

No drop in nerve action potential detected at any time during surgery. Haemostasis. Closure by planes. Tumour sent for PA.

Two Recording Modalities for Intaroperative Monitoring were Used

Bipolar probe mapping of the tumour looking for silent areas without CMAPs (compound muscle action potentials) for resection. Gastrocnemius, Tibialis anterior, Extensor digitorum brevis and Abductor hallucis left were used as recording muscles.

During resection, the structure was mapped to look for silent areas with no CMAPs recorded in the recording muscles and these areas were used to respect the lesion. Fascicles with muscle response were not resected.

ANATOMOPATHOLOGICAL DIAGNOSIS

“Left sciatic nerve: SCHWANNOMA (neurilemoma).

RESULTS

The entire tumour was excised.

The patient was discharged after 48 hours without any neurological deficit with disappearance of his previous pain.

LIMITATIONS

The presentation of a single case does not allow us to generalise the results, but it can serve as a guide for other neurophysiologists to use this simple and very useful technique.

As the sciatic nerve is a very thick nerve, there were difficulties in keeping the electrode in place and the electrode had to be repositioned on occasion. After these relocations, the initial recording was the same as the final recording, with no evidence of changes in latency or amplitude.

CONCLUSION

The mapping of muscle structures dependent on the peripheral nerve provides security for the resection of tumours dependent on nerve fascicles that without this tool it would not be possible to determine whether they are functional or not and could produce a transient or definitive partial or total paresis of the structure that it preserves.

The preservation of the NAP until the end of the surgery ensures that the nerve will be functional even if it presents post-surgical paresis.

Al ser el nervio ciático un nervio de gran grosor hubo dificultades en mantener el electrodo en el teniendo que recolocar en alguna ocasión. Tras etas recolocaionesle registro inicial fue el mismo que el registro final no evidenciándose cambios de latencia o amplitud.

REFERENCES

1. Carvallo Héctor, Hirsch Roberto, Fajardo Francisco, Ciruzzi Juan, Martín Mirta. Ivermectina, corticoides, aspirina y enoxaparina en el tratamiento del covid 19. Educándonos. 2020;7(2):54-56.
2. Carvallo, Héctor y Contreras, Verónica: Estudio de la eficacia y seguridad del uso de ivermectina + iota-carragenina tópicas en la profilaxis de la enfermedad covid 19 en el personal de salud. Revista de Medicina Interna, Sociedad de Medicina Interna de Buenos Aires (SMIBA). Edición online. 2020;16(3):106.112.
3. Carvallo H, Hirsch R. COVID 19. PROTOCOLO I.D.E.A. Noticias Metropolitanas XXXI; 2020;77:20-23.
4. Ortiz Z, Pedroni E, Dosne PC. Infecciones emergentes en Argentina. Bol AN de Medicina. 2002;80(1).

5. Hortal M. Enfermedades infecciosas emergentes y reemergentes: información actualizada. Rev Méd Urug. 2016;32:1.
6. Morens DM, Folkers G, Fauci A. The challenge of emerging and re-emerging infectious diseases. Nature. 2004;430:242-249.
7. Rogiervan Doorn H. Emerging infectious diseases. Medicine. 2014;42(1):60-63.
8. Mayer J. Geography, ecology and emerging infectious diseases. Soc Sci Med. 2000;50(7-8):937-952.
9. Corteguera RR. Enfermedades emergentes y reemergentes: un reto al siglo XXI. Rev Cubana Pediatr. 2002;74:1.