The First Few Hundred Cases for Coronavirus Disease 2019 (COVID-19) in Colombia

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Abstract

Background: SARS-CoV-2 virus is the causative agent of COVID-19 disease. It is essential to understand the epidemiological characteristics of the first few cases in each country. This study aimed to describe the geographical distribution, and temporal appearance of the first few hundred cases in Colombia.

Methods: This observational study was conducted to review the literature and key documentary information from public health institutions, websites and news reports were examined.

Results: The first few 100 cases for COVID-19 were confirmed in Colombia. According to sex, men with 54% predominate, the most affected age group was 20 to 29 yr old (26%), 9% of the cases required hospitalization and no deaths were reported. Most of the confirmed subjects were from the departments of Cundinamarca. To date, most cases are imported (63%), especially from Spain.

Conclusion: The COVID-19 pandemic puts in evidence the lack of understanding, prevention and contention power of the different countries around the world is not as good as it could be. Politics must not affect the different proposed measures.

Keywords: Coronavirus; Case reports; Public health; Pandemic; Colombia

Introduction

A novel respiratory pathogen, first suspected in between Nov and Dec 2019, has been detected and isolated from throat swabs from Chinese patients. This new SARS-CoV-2 virus is the causative agent of COVID-19 disease (Coronavirus Disease 2019), declared a pandemic by WHO (1). As of Mar 19, at least 191127 have been confirmed around the world with as much as 7807 reported deaths (2). Although several theories exist, it is suspected as a point of origin a supermarket in Wuhan, Hubei Province, China (1), from a possible bat origin (3). As a new pandemic, cases have been reported from several other countries of Asia, Europe, America and Oceania (4). It was deemed as a Public Health Emergency of International Concern on Jan 30th, 2020 (5)

Six other species of coronavirus are reported to cause severe human infection, among them, Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) and Middle East Respiratory Syndrome Coronavirus (MERS-CoV), being both zoonotic in origin. The novel coronavirus is closely related to SARS-like coronaviruses (1), as those other species, this novel coronavirus repre-

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sents a public health threat (1, 6). Coronavirus are a large group of highly diverse, enveloped, positive-sense, single-stranded RNA viruses (7). One of the entry receptors used by coronavirus is Angiotensin Converting Enzyme II (ACE-II), using the S protein, which in the case of COVID-19 has a higher affinity to that enzyme than other coronaviruses (8, 9), therefore ACE-II blockers may function as a possible therapeutic to the infection (10). Although several cases started with gastrointestinal symptoms, the most common

manifestations are fever, cough, fatigue and dyspnea; other less common symptoms include expectoration, headache, hemoptysis and gastrointestinal symptoms (diarrhea, nausea and vomiting) (1, 4, 11, 12) (Table 1). Transmission can occur from animals to humans as well as human to human transmission through aerosol and droplets. There is as well the possibility of fecal oral transmission as nucleic acids were found in fecal and anal swabs of confirmed patients (4).

Table 1: Symptoms, complications and radiographical findings associated with COVID-19 infection**

Symptom	*%*	*Complication*	*%*	*Radiographical findings***	*%*
Fever	85.2	ARDS	18.6	Bilateral pneumonia	74.7
Dry cough	64.9	Arrhythmia	9.7	Unilateral pneumonia	25.3
Dyspnea	33.2	Septic shock	6.8	Multiple mottling and ground-glass opacity	14.1
Fatigue	31.7	Acute cardiac injury	4.2		
Myalgia	18.2	Acute renal injury	3.4		
Anorexia	16.9	Acute respiratory injury	3.4		
Expectoration	11.4	Ventilator-associated neumonia	0.4		
Pharyngalgia	8.9				
Rhinorrhea	7.7				
Headache	6.8				
Chest tightness	5.5				
Diarrhea	4.9				
Nausea	4.6				
Dizziness	4.6				
Sputum	4.6				
Vomiting	3.1				
Confusion	2.8				
Abdominal pain	0.9				
Chest pain	0.6				
Anorexia	0.3				

*Source: (11-13). Percentage based on their findings and 99, 88 and 138 confirmed patients respectively.
**Associated patterns: Ground glass opacity, Reticular, Mixed and Consolidation

Unfortunately, the clinical manifestations are non-pathognomic and non-specific, therefore diagnosis depends on epidemiological factors of travel to affected regions which happens to be distributed around the world (2), as well as high clinical awareness.
At the moment the best diagnostic tool available is Reverse-Transcription Polymerase Chain Reac-

tion (RT-PCR), unfortunately, it has a high false-positive rate, so thin slice chest tomography has an important role in diagnosing this disease (13, 14), however, in children, 94.1% of the cases are asymptomatic, mild or moderate, radiological images, such as chest x-ray and tomography, are a crucial tool to define which children need to start intrahospitalary treatment (15). The mortality for

COVID-19 is around 3.4%, lower than SARS and MERS (10% and 35% respectively) (6, 16), although the basic reproductive number of COVID-19 is higher (Ro ~ 1.6-6.9) (17). The diagnostic criteria for case classification include (18), in children symptoms tend to not be as severe but infants and small children appear to be susceptible (15):

1. Asymptomatic: Without any clinical symptoms and signs. No radiological signs. Positive result for COVID-19 nucleic acid test.
2. Mild: Fever, fatigue, myalgia, cough, sore throat, runny nose, sneezing, congestion of the pharynx. No auscultatory abnormalities. Gastrointestinal symptoms may be present.
3. Moderate: The symptoms include the ones in the mild presentation. There can be wheezing, no obvious hypoxemia, snores. In cases without symptoms there are radiological lung lesions, subclinical.
4. Severe: There is dyspnea and other signs and symptoms of hypoxia, such as central cyanosis and hypoxemia.
5. Critical: Acute respiratory distress syndrome. Shock, encephalopathy, myocardial injury, heart failure, coagulation disfunction, acute kidney injury and organ dysfunction. There are microvascular alterations (19), with microvascular steatosis and mild inflammation in cardiac tissue (20).

In retrospective case studies, a lower incidence of COVID-19 in infants, children and pregnant women than in the general population. Even more, it is usual that diagnosis of these cases is done from epidemiological nexus, they live under the same roof as a diagnose patient or for contact with the same. Infants are more susceptible than children, and even so, a fatal outcome is rare and less likely than in adults (15, 21, 22).

The importance of this new pathogen does not lie only in its novelty but also in the characteristics of its development. As previously stated in other publications most novel diseases are zoonotic (23-25) and the best approach for its control and prevention is the one health approach recommended by health organizations, such as the CDC, to face the emerging public health threats (26). Even more, since 2007, is the recommended approach to face pandemics (27) this is the case because 75% of the etiological emerging and re-emerging agents are zoonotic (28).

Therefore, this study aimed to describe the geographical distribution, and temporal appearance of the cases present in Colombia.

Methods

This observational study was conducted to review the literature and key documentary information from the epidemiological bulletins of the National Institute of Health, news reports, website from the Ministry of Health and Social Protection and District Health Department of Bogotá were examined. Proportions were used for presenting descriptive results for categorical variables. Maps were made with QGIS ® version 3.10.0. Graph and statistical analyses were performed with R 3.6.1®.

Results

The first few 100 cases for COVID-19 were confirmed in Colombia. According to the place of residence, most of the confirmed subjects were from the departments of Cundinamarca (4% Cundinamarca and 44% Bogotá), Valle del Cauca (13%) and Huila (8%). The distribution per department can be seen in Fig. 1. Of these, approximately 9% have required hospitalization and to date no deaths have been reported. According to sex, men with 56% predominate, however, the women were the majority of cases till day twelve (Fig. 2). The most commonly affected age group was 20-29 yr-old (26%), the distribution of the different age groups in the most affected regions of the country can be seen in Fig. 3. To date, most of the cases are imported, especially from Spain and the United States of America (Fig.4).
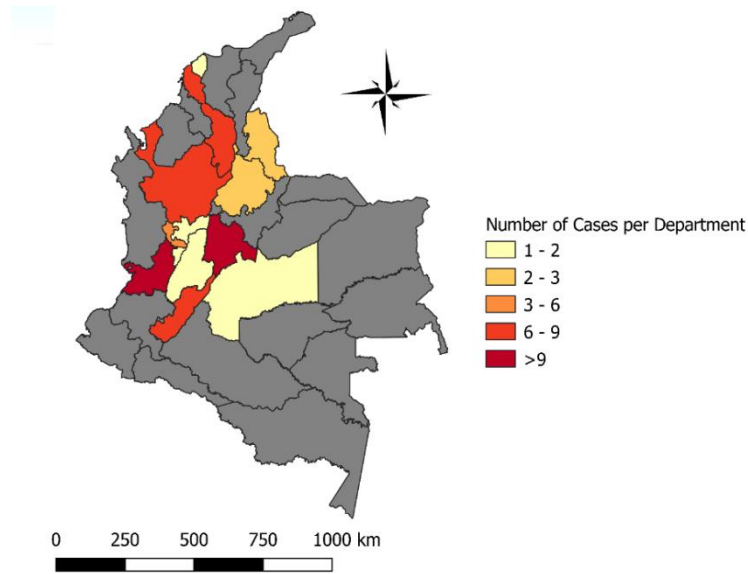
Fig. 1: Geographical distribution and incidence of COVID-19 confirmed cases per Department in Colombia (Source: Reports provided by the National Health Institute till the 18th of March of 2020)
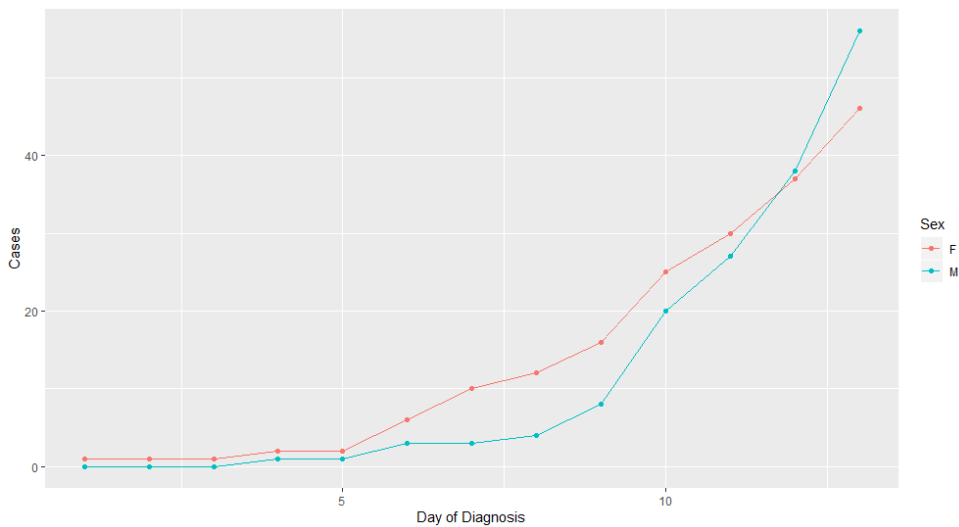

Fig. 2: Number of cases of COVID-19 per sex per day in Colombia (Source: Reports provided by the National Health Institute till the 18th of March of 2020)

The number of cases of COVID-19 per Site of Diagnosis of the case in Colombia can be seen in Fig. 5, in this figure the most frequent site of diagnosis was Bogotá, Neiva and Cali. As well as comparing the growth of confirmed cases in several countries around the world with the one in Colombia, the amount of cases is growing rapidly Fig. 5. The first 15 d from the first confirmed case of the outbreak onward is used. China is not included since the first 15 d are obscure, and the information is not readily available Fig. 6.
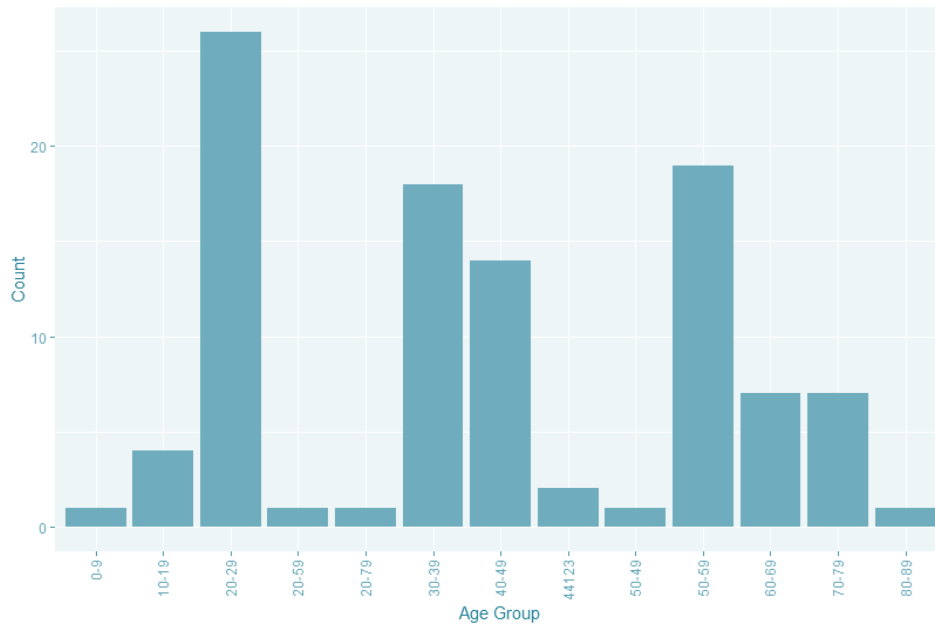
Fig. 3: Number of cases of COVID-19 per age group in Colombia (Source: Reports provided by the National Health Institute till the 18th of March of 2020)
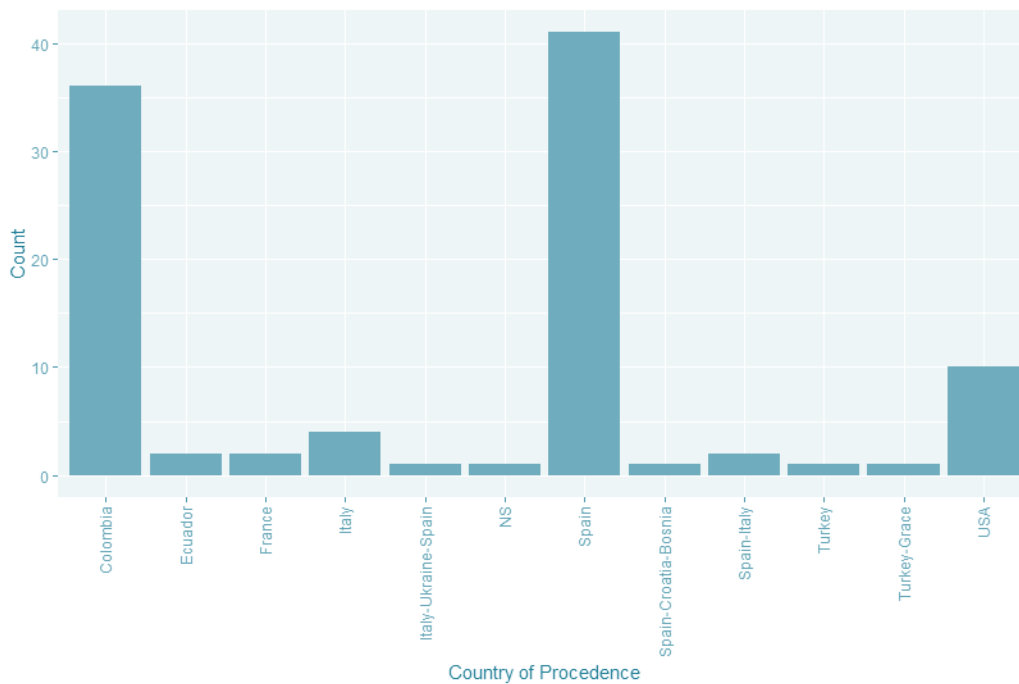

Fig. 4: Number of cases of COVID-19 per country of procedence of the case in Colombia (Source: Reports provided by the National Health Institute till the 18th of March of 2020)
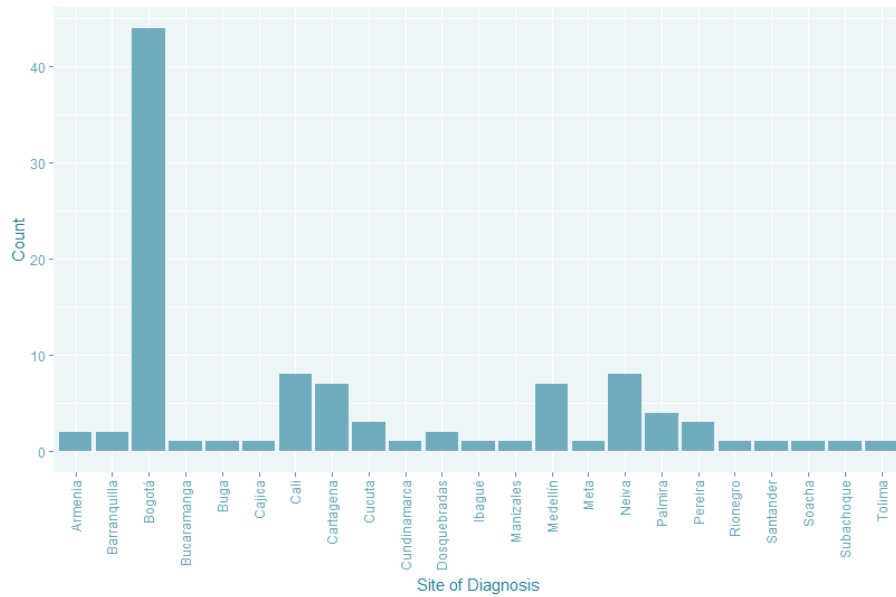
Fig. 5: Number of cases of COVID-19 per site of diagnosis of the case in Colombia (Source: Reports provided by the National Health Institute till the 18th of March of 2020)
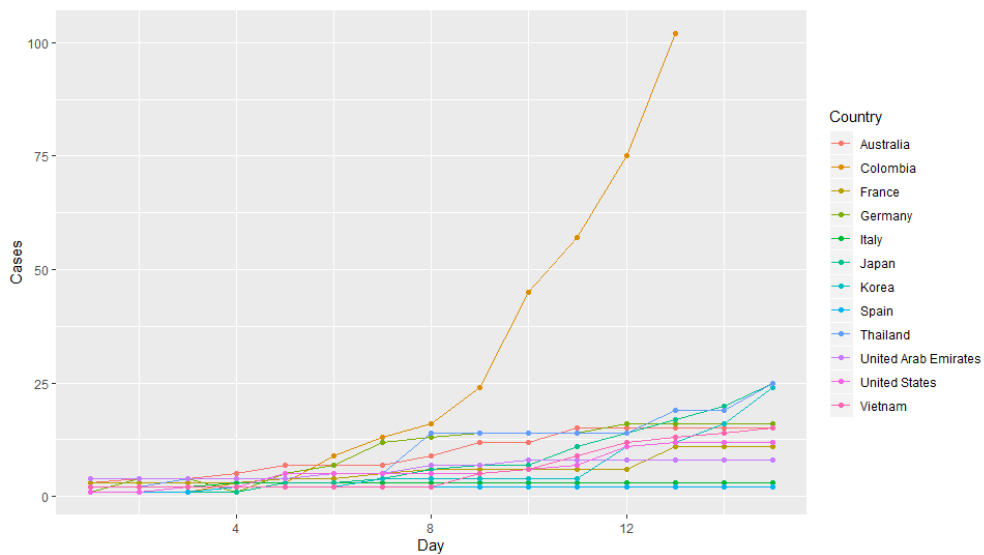

Fig.6: Comparison of the number of cases of COVID-19 for the first 15 d in Colombia and other countries since the first confirmed case (Source: Reports provided by the National Health Institute till the 18th of March of 2020 and several WHO)

Discussion

COVID-19 is one of the latest pandemics caused by coronavirus. Although it is not the most severe of those, it has caused an impact not only on health systems around the world but it has also disrupted daily live and economics in several parts of the world, also it has caused great panic, panic deepened by the media and the lack of the centralized spread of reliable information. The transmission of the latest zoonotic virus is mainly through aerosol with a person to person transmission. Although severity for COVID-19 is not as common as with other viruses, mortality has been estimated between 3.5% and 8.0% depending on the region (2).

As with other countries the cases were first reported in the most important and heavily populated areas in the country. Although in the first half of the outbreak in Colombia the majority of cases were women afterward it flipped to be a male majority, following the global tendency of sex proportion. Less than 10% of the cases have required hospitalization and no deaths have been confirmed to date. At the moment no many children are affected, fortunately, the mortality in this age group is very low (in China of 2143 only one died) (15), this may be because the maturity and function of ACE2 are lower in children than in adults (29), they may have a higher amount of antibodies, the response of the immune system may be different, the preventive closing of educational centers, and preventive isolation, that could keep children away from the source of contagion. In China, the distribution between male children and female children is similar to the one found in this study (male 56.6%, female 43.3%) as well as adults in other studies with approximately a 52%-55% to 48%-45% proportion (11, 30). Therapeutics are varied and it is difficult to make a recommendation, the undergoing clinical trials are full of biases and their results can be misinterpreted due to the presence of multiple therapies and the heterogeneity of the involved groups (31), although chloroquine phosphate appears to be effective (32).

Some comorbidities, such as genetic malformations, diabetes mellitus, arterial hypertension and disease that could compromise the immune system, in both, children and adults (15, 21, 22). This is worrying since in Colombia there are high indices for malnutrition, cancer, cardiovascular diseases, and other chronic diseases such as lung chronic disease, environmental contamination (33-35). A crisis deepened for a week Health System incapable of responding to this type of crisis (36, 37).

The growth of confirmed cases in Colombia has been more rapid than in other countries that were the first to have outbreaks (Japan or Korea) or countries that at the moment are considered to be the epicenter of the pandemic (such as Italy and Spain) in the first 15 d since the first case was confirmed. This is an alert for the public health institutions as well as for the vigilance system. Not only there has been a lack of coordination between health entities and governmental institutions, as well as between different instances of the governmental agencies, were lower dependencies are acting independently from the upper personnel and health measures are not being coordinated, were the closure of different departmental borders, but the vigilance of the airport and terrestrial entry sites are also being critique in a non-constructive manner. Good health measures are not being implemented or are canceled. This is a call for the governmental instances, public health institutions around the world to not let differences in ideology or policies encumber the progress of dealing with this type of pandemics. As well as irresponsible patients that did not follow containment measures. Regarding these aspects:

1. What measure could have been taken before the first case was reported?
2. How much time did the government and health institutions have to be prepared?
3. Why is there a lack of coordination if the different institutions had months in advance to be prepared?
4. Why is that hospital was not ready when we have different examples around the world of the devastating effects of the virus?
5. The growth in confirmed cases is faster than in Italy and Spain. Are we going to face a similar situation as those countries are now in the following months?
6. What can we do to reduce that possibility?

The limitations of this study include the lack of clinical information of the patient, the lack of national publications regarding clinical aspects of the patients, such as some publications in the USA (38) and Korea (39), number of contacts, mobilization of cases, and what interventions were necessary to face the cases. The strength is the comparison between countries and the analysis of the available information.

Conclusion

The COVID-19 pandemic puts in evidence the lack of understanding, prevention, and contention power of the different countries around the world is not as good as it could be. The public health measures implemented by different countries show that some changes must be implemented. As well, politics and differences in ideology must not affect the different proposed measures.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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None.

Conflict of interest

The authors declare that there is no conflict of interest.

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