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Aspects of the COVID-19 Pandemic in Adults With Congenital Heart Disease in the Americas, and the Active Work of the Interamerican Adult Congenital Heart Disease Council of the Interamerican Society of Cardiology (ACHDC-IASC)

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Abstract

Coronavirus Disease 2019 was reported on January 1, 2020 for first time in North America, followed Central America, South America and, finally, in the Caribbean. At the time of this publication, the five countries with the most active infections in the Americas are, in order: US, Brazil, Mexico, Peru and Colombia. It has been estimated that one active COVID-19 case can infect approximately 2-3 other individuals in the general population. According this degree of infectiousness it is estimated that there may be close to 8,800 infected adults with congenital heart disease in the United States and it is assumed that there would be approximately 2,628 in Central America and the Caribbean and close to 7,200 in South America.

Interamerican Adult Congenital Heart Disease Council of the Interamerican Society of Cardiology has published two major documents related to adult congenital heart disease care and the COVID-19 pandemic that provide specific relevant information emitted by experts. To date, various studies are being carried out to clarify the risk factors and final outcome in this population. Interamerican Adult Congenital Heart Disease Council promote the active participation of cardiovacular centers in Latinamerica and Caribean, on research COVID-19 and adult congenital heart disese. This paper sumarize the active work of the Interamerican Adult Congenital Heart Disease Council in pandemic COVID -19 time.

Discussions

The first case in the Americas of novel coronavirus disease, known as COVID-19 (Coronavirus Disease 2019), was reported on January 1, 2020 in the United States (US) in an approximately 30-year-old man from the state of Washington who had recently traveled to China [1]. Subsequently, cases were reported in all North, Central and South American countries and, finally, in the Caribbean, after Bonaire confirmed a case on April 18, 2020. At the time of this publication, the five countries with the most active infections in the Americas are, in order: US, Brazil, Mexico, Peru and Colombia [2].

Ever since the initial outbreak in China, followed by Italy, Spain and the rest of the European countries, one of the primary objectives has been to identify the populations at risk. Thus, the first publications of cases and results showed that the most vulnerable groups were patients over the age of 60 or who had comorbidities and chronic debilitating illnesses, including cardiovascular diseases [3]. Since then, many publications have sought to find the relationship between coronavirus infection and its outcome [4,5].

Only a few published manuscripts are related to congenital heart disease (CHD) and COVID-19 [6-8], possibly due to a lack of research aimed at this special group of patients and the confinement measures which have kept this population sheltered. The most relevant data are provided by the Italian group in which the main complications are highlighted, including heart failure (9%), palpitations/arrhythmias (3%), stroke/transient ischemic attack (3%) and pulmonary hypertension (3%) [9].

Due to the great heterogeneity of CHD manifested as hemodynamic, rhythm, coagulation, immune system and respiratory system disorders, target organ dysfunction, and hematological abnormalities, among others [10-12], it is believed that these risk factors could worsen the progression and adverse outcomes of potential coronavirus infection in this population. However, this has not been proven, and these are just assumptions.

The projected number of adults with CHD (ACHDs) for 2020 is 2.2 million in the United States (US), 657,000 in Central America and the Caribbean, and more than 1.8 million in South America [13]. It has been estimated that one active COVID-19 case can infect approximately 2-3 other individuals in the general population [14]. If we take this degree of infectiousness and apply it to the population of ACHDs, it is estimated that there may be close to 8,800 infected ACHDs in the US, and it is assumed that there would be approximately 2,628 in Central America and the Caribbean and close to 7,200 in South America (Figure 1).

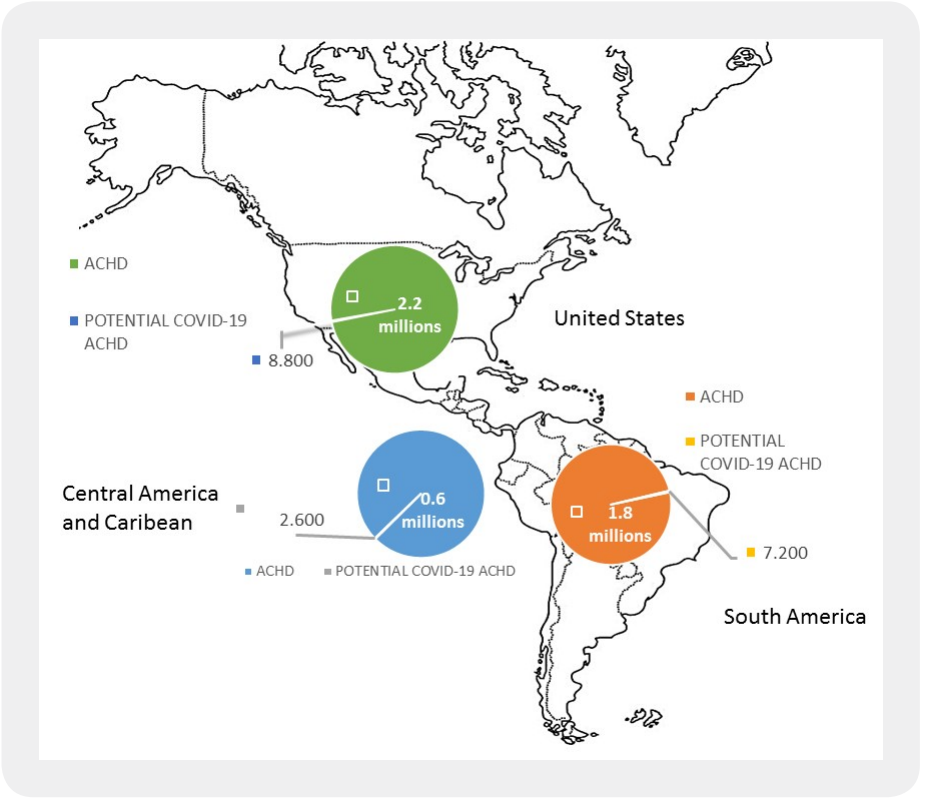

Figure 1: *Adults with congenital heart disease for 2020 is 2.2 million in the United States, 657,000 in Central America and the Caribbean, and more than 1.8 million in South America.*
Estimated 8,800 infected ACHDs in the US; 2,628 in Central America and the Caribbean, and 7,200 in South America. According to the degree of infectivity of the coronavirus

With the pandemic´s advance throughout the American nations, organisms such as the Pan-American Health Organization (PAHO) have expressed their concern regarding the pandemic´s collateral effect on the Latin American (LATAM) nations, as their healthcare resources have been focused on COVID-19 care. This has set aside the various communicable diseases endemic to the Caribbean and South America (malaria, dengue, zika virus disease and chikungunya virus disease, among others), as well as the potential resurgence of vaccine-preventable diseases (measles, rubeola, hepatitis and varicella, among others) which could cause a second wave of epidemics in the Americas [15].

With regard to CHDs, healthcare has been affected by the postponement or halting of specialized activities in cardiovascular centers, which have been converted to "COVID hospitals" in many countries in the region. As a consequence of the lack of timeliness in the treatment and resolution of the ACHDs' problems, increased decompensation and clinical deterioration are to be expected in many patients.

To date, a recent report in China showed that nearly 70% of the participants in a survey experienced a shortage of medications during the COVID-19 outbreak. Altogether, 24.2% of patients indicated that medications were discontinued due to an insufficient supply [16].

Since the first case of coronavirus infection in LATAM, reported in Brazil in February 2020 [17], the Interamerican Adult Congenital Heart Disease Council of the Interamerican Society of Cardiology (ACHDC-IASC) has published two major documents related to ACHD care and the COVID-19 pandemic (Recommendations of the Interamerican Adult Congenital Heart Disease Council for the care and treatment of patients during the COVID-19 pandemic; Recommendations of the Adult Congenital Heart Disease Council for restarting clinical activities after the COVID-19 pandemic) which are available online and provide specific relevant information emitted by experts from the ACHD-LATAM Task Force [18,19].

To date, various studies are being carried out to clarify the risk factors and final outcome in ACHDs. Specifically in LATAM, a study called CorCOVID LATAM has been performed with the active participation of 66 researchers from 13 Latin American countries [20]. This study intends to create a profile of the cardiometabolic disorders present in the LATAM population.

The ACHD-IASC participated in the inclusion of ACHDs, and some of the results will be known in the following months.

Finally, the ACHDC-IASC promoted the active participation of various LATAM ACHD centers in Colombia, Mexico, Dominican Republic, Peru, Chile, Argentina and Brazil in the international research study titled "COVID-19 in Adults with Congenital Heart Disease". This study was initiated in collaboration with the Adult Congenital Heart Association in the United States and endorsed by the International Society for Adult Congenital Heart Disease (ISACHD), and more than 110 centers around the world are participating [21]. In the following months, the first data from this interesting research will be known, which will supply the risk profiles and outcomes with regard to COVID-19 and ACHDs.

Ever since the ACHDC-IASC was established in mid-2018, one of its main objectives has been to integrate the cardiologists responsible for ACHD care in the Americas, and it has concentrated its efforts on this. As part of its development plan, the ACHD-LATAM Task Force is currently being built, with the inclusion of various LATAM cardiologists who are interested in actively participating in several projects aimed at improving the care and treatment of ACHDs. We hope that this constant effort by ACHDC-IASC will bring new horizons and common goals for all American countries, and especially LATAM countries.

Conclusions

Pandemic coronavirus disease currently affects too many American countries, and the five countries with the most active infections in the Americas are, in order: US, Brazil, Mexico, Peru and Colombia. It is clear that the most aggressive behavior and worst outcome of the infection occurs in already established risk groups, such as those with cardiovascular disease. Those with congenital heart disease make up a special risk group. Due to this group's high heterogeneity and the paucity of published cases related to coronavirus infection, its ultimate behavior cannot yet be known.

At the moment we don´t know how many ACHD are infected in American countries. According to the degree of infectiousness of the coronavirus, the number of ACHDs are only estimated, based on general

population exposure and current ACHDs in American countries. Adult Congenital Heart Disease Council of the Inter-American Society of Cardiology (ACHDC-IASC) is collaborating and working actively in various research's projects on COVID-19 and ACHD. Finally with current investigations, we hope to know the true outcomes and establish management guidelines in ACHDs and COVID-19 infection, in American countries.

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Conflicts of Interests

I have no conflicts of interest to declare

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