Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Editor's Page

Diabetes mellitus: Lessons from the COVID-19 pandemic

COVID-19 was first presented to the Huanan Seafood Wholesale Market in Wuhan (Hubei Province, China)[1] as an acute respiratory disease with variable severity caused by the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2)[2,3]. At the end of January 2020, the World Health Organization (WHO) announced the COVID-19 outbreak a Public Health Emergency of International Concern. During February 2020, the daily number of new cases and new death increased worldwide including Europe. Accordingly, COVID-19 has been declared as a pandemic by WHO[4].

Beyond the lung, which is the primary affected organ, cardiovascular system involvement has also been observed as the second most significant target of COVID-19[5]. To this point, the role of human angiotensin-converting enzyme 2 (ACE2) receptor, which is bound with the SARS-CoV-2 viral surface spike protein facilitating virus entry into cells[6] is of importance. ACE2 is expressed in the lung, mainly at type II alveolar cells, as well as in the myocardium, kidney, liver, intestinal epithelium, and vascular endothelium. Indeed COVID-19 causes multi-organ insufficiency or failure[7].

In patients with COVID-19, the incidence of myocardial injury is estimated to be 28% and is associated with fatal outcome[8] (Table 1). From COVID-19 patients who die, 75% has one or more comorbidities with hypertension recognized as the most common, while risk factors associated with cardiovascular disease i.e., diabetes mellitus, smoking, and stroke has also been associated with fatal outcome[9]. Indeed, in patients with severe course of the COVID-19 with life-threatening pneumonia in need of noninvasive or invasive ventilation, the incidence of diabetes mellitus was more than 16%.

The interaction between diabetes mellitus, COVID-19 pandemic, and cardiovascular complications once again underline the point that cardiovascular system and diabetes mellitus should be studied and managed as one entity to achieve the best health outcome [10-16]. To this direction, Tentolouris A et al. published in this issue of HJC, significant data concerning the prevalence of diabetes mellitus in Greece[17]. Based on data on more than 30,000 subjects, they reported an incidence of diabetes mellitus of 6.6%. Importantly, subjects with diabetes mellitus have increased prevalence of comorbidities including the heart (24%), lung (11%) and kidney (3.4%) diseases. These interesting data on comorbidities of subjects with diabetes mellitus provide clues to reasons associated with worse outcome of COVID-19. Additionally, it may help to identify the part of the population most vulnerable to disease for SARS-CoV-2.

A few other interesting topics are covered in this issue of HJC. Pulmonary arterial hypertension, despite recent advancements continue to pose significant difficulties in the diagnosis and treatment [18-22]. Echocardiography is the diagnostic modality most often used to raise the suspicion of pulmonary arterial hypertension, which should be further confirmed by right heart catheterization. Tang P.[23] based on 30 subjects with pulmonary arterial hypertension reported that circulating expression levels of microRNAs-509-3p was significantly lower as compared to controls. Interestingly, he concludes that expression levels of microRNAs-509-3p can be used as an additive to echocardiography diagnostic modality of pulmonary arterial hypertension facilitating the diagnostic approach and increasing the diagnostic efficacy of noninvasive modalities.

In this issue of HJC, Keramida K et al.[24] review the current literature on the role of right ventricle in patients with hypertrophic cardiomyopathy[25]. Based on the current literature, they focus on the remodeling of the right ventricle, which may present with dynamic obstruction, subtle systolic impairment, and significant diastolic dysfunction. Importantly, they emphasize the increased incidence of supraventricular and ventricular arrhythmias in subjects with hypertrophic cardiomyopathy and right ventricle involvement.

In another interesting topic, Andreou I et al.[26] review the evidence regarding the role of ongoing atherosclerosis on the incidence of stent failure. Specifically, they highlight that beyond neointimal growth or mechanical/technical complications responsible for early restenosis, recurrent atherosclerosis complications (i.e., due to neoatherosclerosis or paleoatherosclerosis), occurring inside or behind the stent is the reason of most stent complications. These data emphasize the need to further study and manage atherosclerotic risk factors in patients following percutaneous transluminal interventions.

In the management of coronary atherosclerosis, Sandoval Y et al.[27] present their experience on the use of laser-assisted orbital and rotational atherectomy. Specifically, they described how laser

Table 1
Overview of mechanisms causing cardiac implications in patients with COVID-19

- Myocardial cell infection causing myocardial injury
- Myocardial infiltration by activated T-cells and macrophages causing myocarditis
- Infection of smooth muscle cells and pericytes causing microvascular and macrovascular impairment
- Cytokine storm exacerbating inflammatory milieu and causing atherosclerosis progression and progress of stable atherosclerotic plaques to vulnerable plaques
- Blood deoxynation causing oxygen supply/demand imbalance and myocardial ischemia
- All aforementioned mechanisms can cause heart failure

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may modify the lesion to allow crossing when smaller balloons and microcatheters are unable to cross the occlusion.

In another interesting topic, Laina A et al.[28] discuss the arrhythmic risk of patients with mild left ventricle systolic impairment and the need to better stratify this underrepresented population in large randomized studies. Specifically, they argue on the need to screen patients with mild left ventricle impairment with a series of noninvasive tests, which when examined may reveal a vulnerable population[29,30].

Conflict of interest

There is no conflict of interest.

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