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EDITORIAL

Pulmonary rehabilitation in patients with post-COVID-19 syndrome

Reabilitação pulmonar em pacientes com Síndrome pós-COVID-19

Rehabilitación pulmonar en pacientes con Síndrome post-COVID-19

In December 2019, a series of atypical cases of acute respiratory syndrome occurred in China (Wuhan), spreading to other areas. It was found to be a new coronavirus, and the term COVID-19 (COronaVIrus Disease 2019) was adopted to refer to the disease caused by it[1]. Since then, COVID-19 has affected a large number of people worldwide, with the World Health Organization declaring a pandemic on March 11, 2020[2].

Acute COVID-19 especially affects the respiratory system, and patients show fever, dry cough, and dyspnea[3]. In addition to the possibility of affecting other organs, symptoms such as headache, dizziness, generalized weakness, and gastrointestinal symptoms have been observed[4]. Respiratory symptoms can range from mild to severe, evolving to acute respiratory distress syndrome in a short interval of up to nine days[3].

Before the vaccine, about 80% of infected patients developed mild symptoms; 14%, severe; and 6%, critical ones[2]. Mortality was high in older patients[5], but younger individuals were also affected[6].

Among hospitalized patients, the vast majority (about 90%) had at least one previous medical condition. The most common were systemic arterial hypertension, obesity, metabolic and cardiovascular diseases[7], and chronic lung diseases[8]. There is still no specific treatment available – only ongoing clinical trials – so clinical management is based on supportive therapy[8].

Worldwide vaccination began in December 2020, and currently, about 49% of the population received the first dose of the COVID-19 vaccine[9]. However, more time is needed to effectively control the number of cases, especially due to virus variants.

Meanwhile, patients recovering from COVID-19 show a broad clinical spectrum of symptoms, such as fatigue, chest pain, dyspnea, cognitive and sleep disorders, as well as reduced function and quality of life[10].

The literature refers to the persistent symptoms of COVID-19, i.e., those lasting more than four weeks[11], by the terms "post-COVID-19," "persistent COVID-19 symptoms," "post-COVID-19 manifestations," "post-acute COVID-19," and "post-COVID-19 syndrome[12]." There are no specific rehabilitation guidelines for this population, and clinical practice has been mainly guided by the results of preliminary studies, evidence of rehabilitation in critically ill surviving patients, and specialists' experience[13].

International societies have published recommendations for rehabilitation based on experts'– references in their areas of expertise – opinions. The European Respiratory Society and the American Thoracic Society coordinated a multinational task force which considered the pulmonary rehabilitation model as a basis for treatment, especially of patients suffering from persistent respiratory consequences[14]. The authors estimated 40% of patients admitted to intensive care units with COVID-19 as the minimum number of new candidates for rehabilitation. To begin rehabilitation, an interval of six to eight weeks after discharge was recommended as a window to consider patients as non-infectious. Recommendations to prevent local infection should continue to be followed and telerehabilitation may be adopted. Thus, this task force recommends that survivors receive a broad rehabilitation program and that those with pre-existing or current respiratory conditions redeive a pulmonary rehabilitation program consistent with established international standards.

The British Society of Rehabilitation Medicine (BSRM) described as key contents of post-COVID-19 rehabilitation programs exercise aimed at overcoming deconditioning and improving lung function and neuromuscular complications; the practice of activities to restore autonomy, even if it is necessary to use auxiliary devices; emotional support to treat aspects related to anxiety, depression,

and sleep disorders; education and information for self-management and definition of goals for patients and family members; and adaptations with the use of equipment or whatever is necessary to the patient, even in the short term[15].

A group of UK experts proposed a consensus on post-COVID-19 rehabilitation which complements the BSRM statement, the Stanford Hall consensus statement[16]. In it, the authors expanded the potential rehabilitation needs in several contexts, including pulmonary rehabilitation, based on the evidence available so far.

Among the general rehabilitation recommendations of the Stanford Hall consensus statement are strengthening the use of personal protective equipment by professional, measures to prevent and reduce the risk of aerosolization during interventions and activities; individualization of treatment plans, considering patients' comorbidities; improvement of dyspnea, physical function, and quality of life; reassessment of patients during the rehabilitation process; and understanding patients' condition and strategies for recovery.

More specifically for pulmonary rehabilitation, it is recommended, particularly for patients requiring oxygen therapy, the practice of low-intensity exercises (less than or equal to three metabolic equivalents of task), associated with the monitoring of vital signs. The progression of exercise intensity should be based on patients' symptoms. Cardiac sequelae should be considered in all post-COVID-19 patients, and, in case of confirmed heart disease, the patient should be referred to cardiac rehabilitation.

In Brazil, the Brazilian Association of Cardiorespiratory Physiotherapy and Physiotherapy in Critical Care (Assobrafir) also spoke, in an official document, on evaluation and rehabilitation recommendations after COVID-19[12]. Methods are suggested to evaluate the increase exercise tolerance, muscle strength, respiratory dysfunctions, loss of balance, and changes in mobility, as well as the use of questionnaires and scales to assess symptoms of dyspnea, fatigue, disabilities, quality of life, and sleep. Evaluation is critical to understanding the improvement of post-rehabilitation patients and, even more, to help build evidence of clinical practice for this population – obviously as part of clinical trials.

Due to the heterogeneity of patients with post-COVID-19 syndrome, Assobrafir also indicates the individualized prescription of exercises, considering the main persistent symptoms and associated comorbidities. The recommendations adapted for pulmonary rehabilitation in this document are based on previous literature and follow the FITT method (Frequency, Intensity, Type, and Time) in the components of aerobic exercise, strength, balance/flexibility, and respiratory muscle training. In general, the recommended intensity is mild to moderate, considering patients' performance tolerance and training progression. There is a consensus among the aforementioned entities of the need for a multidisciplinary approach due to the multisystemic nature of the disease.

Considering that survivors' sequelae can dominate the care scenario for years[16], rehabilitation services around the world face the great challenge of meeting a demand beyond the conventional one. Some strategies have been proposed to minimize the difficulties of access to pulmonary rehabilitation services, including telerehabilitation[17].

Telerehabilitation consists of using information and communication technologies to provide remote rehabilitation care[18]. In Brazil, the Federal Council of Physical Therapy and Occupational Therapy[19] authorized teleappointments and telemonitoring services to expand patient care in general, in line with the Pan American Health Organization and the World Health Organization[20].

Despite the need for quality studies that support these new modalities of assistance in pulmonary rehabilitation, this scenario evinces the efforts of the scientific community and rehabilitation professionals around the world to improve care for patients suffering from the consequences of the post-COVID-19 syndrome.

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