



Respiratory rehabilitation for post-COVID19 patients in spa centers: first steps from theory to practice

Michele Antonelli^{1,2} · Davide Donelli³

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Abstract

With this correspondence, we would like to briefly outline a practical perspective about a possible integrative and effective management in spa settings of COVID-19 long-term sequelae, with a keen focus on post-infective lung damage and fibrosis, which is expected to become epidemiologically relevant in the general population. In order to outline a standard/baseline model of care, we think that it can be useful to refer to already existing rehabilitative plans with a long-standing tradition in Italy, such as those ones prescribed for work-related respiratory diseases like pneumoconiosis, in which long-term outcomes share some clinical characteristics with post-infective lung fibrosis. Such programs include diagnostic procedures (spirometry, ECG, blood tests) and treatments like respiratory physio-kinesiotherapy and postural drainage of the lungs; mechanical pulmonary ventilation for rehabilitative purposes, with or without drugs, along with standard medical and, when required, oxygen therapy; inhalation therapies with mineral waters; physical activity and psychological support. In conclusion, we believe that spa facilities can be a proper setting for respiratory rehabilitation and that already existing programs employed in occupational medicine can be a good starting point to plan rehabilitative strategies for post-COVID-19 patients. In particular, health spa centers can be useful not only to offer tailored programs of physical rehabilitation but also to provide patients with a psychologically supportive and health-promoting environment. Further studies on the topic are advised to properly assess and quantify with adequate outcome measurements the beneficial effect of a spa-based rehabilitative program in post-COVID-19 patients.

Keywords Medical hydrology · COVID-19 · SARS-CoV-2 · Spa centers · Rehabilitation · Public health

Dear Editor,

We have read with pleasure the letter recently written by Prof. Masiero et al. about rehabilitative programs in health spa (“salus per aquam”) centers for post-COVID-19 patients (Masiero et al. 2020). In line with what already affirmed by the authors in their correspondence, we believe that spa facilities can have interesting characteristics which enable them to meet specific health-related needs of rehabilitative patients, including those ones with pulmonary sequelae or other long-term consequences of SARS-CoV-2 infection (Spagnolo et al.

2020). In particular, health spa centers can be useful not only to offer tailored programs of physical rehabilitation but also to provide patients with a psychologically supportive and health-promoting environment, which can play a role for stress relief and for the improvement of individual Quality of Life (QoL) (Antonelli and Donelli 2018a; Antonelli et al. 2018).

With this correspondence, we would like to briefly outline a practical perspective about a possible integrative and effective management in spa settings of COVID-19 long-term sequelae, with a keen focus on post-infective lung damage and fibrosis, which is expected to become epidemiologically relevant (Spagnolo et al. 2020).

First of all, we want to underscore once more that post-COVID-19 patients must not be infectious anymore by the time they are admitted at the spa center, which means that they have to be declared “fully recovered” after proper clinical (no symptoms) and laboratory (two consecutive negative tests) checks, as recommended by international and local guidelines (ECDC, 2020; CDC 2020). Another fundamental point is the application of specific hygienic measures now adopted in

✉ Michele Antonelli
ricerca@termedimonticelli.it

¹ Terme di Monticelli, via Basse 5, 43022 Monticelli Terme, Parma, Italy

² Institute of Public Health, University of Parma, Parma, Italy

³ USCA (Medical Special Units for the management of COVID-19 patients), AUSL-IRCCS Reggio Emilia, Reggio Emilia, Italy

Italian spa centers to prevent the spread of COVID-19 (Clementi et al. 2020).

In order to outline a standard/baseline model of care, we think that it can be useful to refer to already existing rehabilitative plans with a long-standing tradition, such as those ones prescribed for work-related respiratory diseases like pneumoconiosis, in which long-term outcomes share some clinical characteristics with post-infective lung fibrosis. In Italy, rehabilitation for occupational diseases is usually covered by a public insurance agency called “I.N.A.I.L.,” which follows well-established protocols. INAIL-supported rehabilitative basic program for patients with work-related respiratory diseases (including pulmonary fibrosis due to silicosis and asbestosis) usually lasts around two weeks, can be repeated over the years, and encompasses the following treatments (INAIL 1995):

- Respiratory physio-kinesiotherapy and postural drainage of the lungs.
- Mechanical pulmonary ventilation for rehabilitative purposes, with or without drugs, along with standard medical and, when required, oxygen therapy.
- Inhalation therapies with mineral waters.
- Physical activity.
- Psychological support.

The ultimate goal of these treatments, all combined together, is to improve respiratory functions, reduce mucus and chronic inflammation in the airways, ameliorate chest wall kinematics, and increase not only physical health but also mental wellbeing. Health-promoting practices and education can be also important to quit bad lifestyle habits. At admission, patients undergo a series of diagnostic procedures, including a spirometry, the measurement of blood oxygen saturation, an ECG record, a peripheral venous blood test to check common biochemical parameters, and, in cases of necessity, a chest X-ray examination (INAIL 1995). Then, spa physicians can better tailor the standard program to the patient’s health needs, even considering possible comorbidities. As such, other interventions like water kinesiotherapy, balneotherapy, dietary prescriptions, relaxation techniques, and integrative medicines can all contribute to improve the patient’s general health, functionality, and QoL. Moreover, spa centers and the surrounding natural environment, with their specific characteristics and positive impressions, can have a role in the general health improvement (Antonelli and Donelli 2018b; Antonelli et al. 2019). During the entire program, patients are assisted by dedicated physiotherapists with expertise in respiratory rehabilitation and they can also benefit from medical checks provided by spa physicians. Consultations with specialized medical doctors and general practitioners, along

with adherence to general evidence-based rehabilitative recommendations, can further improve the quality of care thanks to an optimal integration of multi-disciplinary skills and knowledge (Clini et al. 2018; Troosters et al. 2019).

In conclusion, we believe that spa facilities can be a proper setting for respiratory rehabilitation and that already existing programs employed in occupational medicine can be a good starting point to plan rehabilitative strategies for post-COVID-19 patients. Further studies on the topic are advised to properly assess and quantify with adequate outcome measurements the beneficial effect of a spa-based rehabilitative program in post-COVID-19 patients. Finally, reinforcing the training of spa health professionals and promoting health education of patients can contribute to mitigate fears and concerns induced by the spread of SARS-CoV-2 infection in the population.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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