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Letter to Editors

Spa therapy (balneotherapy) for rehabilitation of survivors of COVID-19 with persistent symptoms

ARTICLEINFO

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Dear Editor,

Introduction for the hypothesis

The knowledge on persistent symptoms and rehabilitation needs of COVID-19 survivors began to emerge [1–3]. The most common persisted symptom was fatigue (53%–64%), followed by dyspnea (42%–50%) [1–3]. The other symptoms were (but not limited to) psychological distress, joint pain, chest pain, cough, sleep disorders, and functional disability [1–3]. Also, patients reported a decreased quality of life [1–3].

Spa therapy may include balneotherapy (immersion in thermalmineral water), peloid therapy, aquatic exercises, physical therapy modalities, and exercise according to spas' ability to deliver these treatments [4]. Recent reviews showed spa therapy/balneotherapy being beneficial in improving fatigue, joint pain, functional disability, psychological distress, sleep disorders, and quality of life in other diseases with these symptoms [5–7].

The recommendations of a recent article by Gasparyan et al. addressing the structuring and discussing the hypothesis [8] were followed in this hypothesis.

Formulate hypothesis

The proposed hypothesis is that spa therapy can be used in postacute rehabilitation for survivors of COVID-19 with persistent symptoms.

How to test the hypothesis

This hypothesis, which was based on an extrapolation of beneficial effects of spa/ sanatorium therapy seen in other diseases with similar symptoms [5–7], needs to be tested, because the pathophysiological mechanisms of these symptoms and experiences/perceptions of patients with different diseases may not be the same. The randomized controlled trials comparing spa therapy with usual care in survivors of COVID-19 with persistent symptoms are needed to test this hypothesis.

Implications

Spa therapy is in general deemed safe. In 2 studies with a large sample size, no serious adverse events associated with spa therapy were observed [9,10]. Regarding the mild to moderate severity of adverse events, an increase in pain, fatigue, hypertension, and upper respiratory tract infections were observed in some patients [9,10]. However, characteristics of spa therapy interventions (i.e. duration, temperature, etc.) should be individualized based on the clinical status of survivors of COVID-19, and the safety of spa therapy in these patients needs to be investigated.

There are some important clinical implications. First, survivors of COVID-19 may benefit from spa therapy. Furthermore, spas may increase the number of places delivering rehabilitation to survivors of COVID-19. Therefore, the workload on hospital rehabilitation units, which are currently overburdened by acute rehabilitation of COVID-19, would be lessened. Lastly, considering its inexpensive nature, integrating spa therapy into the rehabilitation programs may decrease the economic burden of COVID-19 on health systems, particularly for some European countries, Turkey, Israel and Japan where spa therapy/balneotherapy is widely available and preferred by patients.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Conflict of Interest

The author has no conflict of interest in this hypothesis.

References

- Carfi A, Bernabei R, Landi F. Persistent symptoms in patients after acute COVID-19. JAMA 2020;324(6):603.
- [2] Halpin SJ, McIvor C, Whyatt G, Adams A, Harvey O, McLean L, et al. Postdischarge symptoms and rehabilitation needs in survivors of COVID-19 infection: a crosssectional evaluation. J Med Virol 2020. https://doi.org/10.1002/jmv.26368.
- [3] Garrigues E, Janvier P, Kherabi Y, Le Bot A, Hamon A, Gouze H, et al. Postdischarge persistent symptoms and health-related quality of life after hospitalization for COVID-19. J Infect 2020. https://doi.org/10.1016/j.jinf.2020.08.029.
- [4] Kardeş S, Karagülle M, Geçmen İ, Adıgüzel T, Yücesoy H, Karagülle MZ. Outpatient balneological treatment of osteoarthritis in older persons: a retrospective study. Z Gerontol Geriat 2019;52(2):164–71.
- [5] Kamioka H, Nobuoka S, Iiyama J. Overview of systematic reviews with metaanalysis based on randomized controlled trials of balneotherapy and spa therapy from 2000 to 2019. Int J Gen Med 2020;13:429–42.

- [6] Stier-Jarmer M, Kus S, Frisch D, Sabariego C, Schuh A. Health resort medicine in non-musculoskeletal disorders: is there evidence of its effectiveness? Int J Biometeorol 2015;59(10):1523–44.
- [7] Khaltaev N, Solimene U, Vitale F, Zanasi A. Balneotherapy and hydrotherapy in chronic respiratory disease. J Thorac Dis 2020;12(8):4459–68.
- [8] Gasparyan AY, Ayvazyan L, Mukanova U, Yessirkepov M, Kitas GD. Scientific hypotheses: writing, promoting, and predicting implications. J Korean Med Sci 2019; 34(45):e300.
- [9] Forestier R, Desfour H, Tessier JM, Francon A, Foote AM, Genty C, et al. Spa therapy in the treatment of knee osteoarthritis: a large randomised multicentre trial. Ann Rheum Dis 2010;69(4):660–5.
- [10] Rat AC, Loeuille D, Vallata A, Bernard L, Spitz E, Desvignes A, et al. Spa therapy with physical rehabilitation is an alternative to usual spa therapy protocol in symptomatic knee osteoarthritis. Sci Rep 2020;10(1):11004.

Sinan Kardeş¹

Department of Medical Ecology and Hydroclimatology, Istanbul Faculty of Medicine, Istanbul University, Istanbul, Turkey E-mail address: sinan.kardes@istanbul.edu.tr.

¹ ORCID ID: 0000-0002-6311-8634.