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LETTER TO THE EDITOR

SARS-CoV-2 infection may enhance the adverse effect of thyroid disturbance on climacteric symptoms

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To the Editor:

To date, acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is an ongoing pandemic; it is rapidly spreading and influencing human living [1]. Trans-membrane protease serine 2 (TMPRSS2) and angiotensin-converting enzyme 2 (ACE2) as host factors play a role in the pathogenesis of SARS-CoV-2 infection [2]. High expression of both ACE2 and TMPRSS2 was observed in the thyroid gland [3]. Some evidence supports the association between SARS-CoV-2 infection and thyroid malfunctions, such as nonthyroidal illness syndrome, thyrotoxicosis, hypothyroidism, and subacute thyroiditis [3–6]. Moreover, this infection may act as a promoter of thyroid-related autoimmune disease [7].

Thyroid hormones are known as master regulators in body metabolism and malfunction of thyroid glands due to inducing oxidative stress linked to aging [8–10]; as a result, hypothyroidism is most commonly observed in postmenopausal women [11, 12].

At the onset of menopause, hormonal decline (especially estrogen) leads to multiple climacteric symptoms [13], that may be further exaggerated by thyroid dysfunction [14], and even some symptoms of this dysfunction are wrongly attributed to the climacteric symptoms [12]. Even in euthyroid menopausal women, climacteric symptoms are linked to the function of the thyroid gland [15]. Nowadays, with SARS-CoV-2 pandemic, the possible adverse effect of this infection on thyroid function may induce additional thyroid malfunction in menopausal transition period, may resulting in an increase in intensity of climacteric symptoms.

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Thyroid dysfunction and lack of estrogen in menopausal transition are associated with several morbidities that reduce the quality of life of the affected. It has been shown that thyroid dysfunction may be resulted in cognitive impairment, depression, disability, loss in bone mineral density (BMD), osteoporosis, and fracture risk [16, 17]. In addition to an impairment in quality of life [18], menopause is associated with cardiovascular/metabolic risk, cognition problems, and bone mineral density (BMD) loss [19–22]. Considering the aggregation of thyroid dysfunction with SARS-CoV-2 infection [10], it assumed that all these adverse effects of thyroid dysfunction and estrogen deficiency may be increased during this hard period of the COVID-19 pandemic.

Taken as a whole, it can be concluded that viral infection due to the SARS-CoV-2 possibly affects the thyroid gland in women during the menopausal transition and postmenopausal period. Due to the possible bidirectional association between thyroid function and climacteric symptoms and thyroid function and SARS-CoV-2 infection, it is hypothesized that SARS-CoV-2 may alter growing future morbidities due to the worsen thyroid problems and climacteric symptoms in women during menopausal transition.

There are some questions that remain yet to be answered in future studies:

Could climacteric symptoms be hiding a thyroid problem due to the SARS-CoV-2 infection?

Does thyroid dysfunction related to the SARS-CoV-2 infection act as a promoter of climacteric symptoms?

Does thyroid dysfunction related to the SARS-CoV-2 infection worsen the physiological changes of thyroid function and climacteric symptoms?

Does thyroid dysfunction related to the SARS-CoV-2 infection worsen health outcomes related to the climacteric symptoms?

Summary of Recommendations:

To investigate the possible association between SARS-CoV-2 infection, thyroid function, and climacteric symptoms.

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To investigate the severity of climacteric symptoms in women who are infected by SARS-CoV-2 infection.

To take extra attention in women infected by SARS-CoV-2 infection during menopause, perimenopause, and postmenopausal period especially those at risk of thyroid disease.

To watchful management of thyroid dysfunction symptoms and climacteric symptoms during the menopausal transition.

Declarations

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed consent Not applicable.

Disclosure of interests No conflict of interest to disclose.

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