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In this issue we encompass topics from dementia to pollution. We can do this discussing the subject of vitamin D because there are recent findings of a possible role here too.

The expert authors to whom we assigned the detailed study of the possible relationship between vitamin D deficiency and dementia have pointed out that studies in the field of neurological physiopathology indicate that vitamin D can exert numerous actions in the central and peripheral nervous system. These can be summarised in four main effects: neurotrophic support, neurotransmission, neuroprotection, and neuroplasticity. Moreover, epidemiological data available on the relationship between vitamin D status and degenerative neurological diseases, such as dementia, seem to support evidence described in animal models since they have generally described inverse relationships, including a dose-response relationship, between serum 25(OH)D levels and the risk of dementia. Nevertheless, the authors admit that there is currently no solid evidence that supports a preventive or otherwise positive effect of vitamin D supplementation in this field. Although given the important and varied limitations of the studies conducted so far, this effect cannot be ruled out. Still, they have wisely concluded that, since these are generally elderly subjects, supplementation should in any case be viewed as justified, considering the acknowledged benefits for the bones, which are certainly greater than the costs and risks of undesirable effects, and, I might add, the known inability of the elderly to naturally produce a daily dose of vitamin D.

On the other hand, the authors of the second article, have provided us with an original contribution, which is also based on their recent research on the possible correlation between pollution and alterations in vitamin D metabolism. Specifically, they have observed that per and polyfluoroalkyl substances (PFAS), which are mainly used to make different types of materials such as fabrics, carpets, upholstery, etc., resistant to oils and water, and which are the cause of widespread and worrying food contamination, especially in some areas of the Veneto region, may interfere with vitamin D receptors because of their similarity with steroid hormones. The result appears to be a reduced response of bone cells to vitamin D, which is manifested by lower bone mineralisation and an altered response of vitamin D-sensitive genes. Clinically, this would be corroborated by a higher prevalence of osteoporosis in populations exposed to PFAS and findings of higher average serum levels of parathormone, which is an expression of functional hypovitaminosis D. On the other hand, you can also see why subclinical and widespread vitamin D deficiency, which characterises our population, might represent a susceptibility factor to the negative health effects of PFAS exposure. These issues were the subject of a recent Commission of the Superior Council of Health, in which I had the pleasure of participating, which produced a document of specific recommendations that should be published soon on the Ministry of Health website. These include, among populations exposed to PFAS contamination, the recommendation to promote the dosage of circulating levels of 25(OH)D, its main metabolites and of biomarkers of their functionality in phosphocalcic and bone metabolism. In addition, densitometric screening and assessment of the incidence of fragility fractures and extra-skeletal diseases that may also be correlated with absolute or functional vitamin D deficiency (particularly cardiovascular and immunological diseases, whose prevalence seems to actually be

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increasing in individuals exposed to PFAS), and the possible implementation of studies involving vitamin D supplementation.

The problem of pollution, as you know, apart from being currently topical, is of great concern for future generations. Our school recently observed a correlation between air pollution (particularly particulate matter) and the prevalence of osteoporosis [1] or reactivation of disease [2] and a poorer response to treatment in patients suffering from rheumatoid arthritis [3]. Does absolute or func-

tional vitamin D deficiency also play a role in explaining these correlations?

Merry Christmas and Happy New Year.

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