Too little sun-exposure in summer?

It is well known that UV rays are responsible for DNA damage in exposed cells: because of that, they are considered carcinogens for skin cells. In the last decades, frequent worldwide campaigns have advised people to avoid sun exposure in order to reduce skin cancer risk. However, epidemiologic data demonstrated that the incidence of skin cancers, including melanoma, is progressively increasing and that in parallel, there is a widespread prevalence of hypovitaminosis D in the population. The consequences of vitamin D insufficiency on adult skeleton are scarcely appreciated, but it is considered an important cofactor for osteoporosis, and fractures. In addition, recent data have surprisingly, but significantly, expanded our view about the role of hypovitaminosis D, including susceptibility to infectious diseases, regulation of immune system and promotion of several cancers.

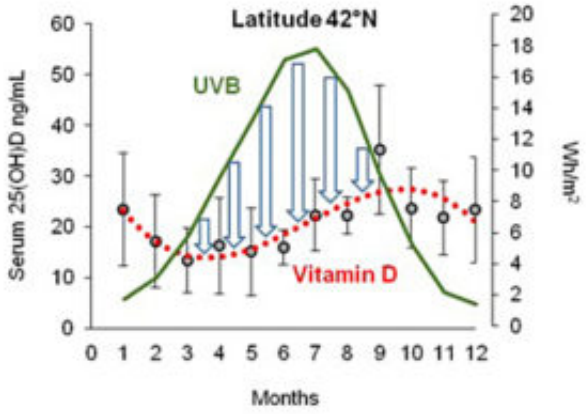

Fig. 1. Seasonality of vitamin D and UVB irradiance at latitude 42°N. For each month in which blood withdrawal was performed mean value of serum 25(OH)D (ng/ml, red dotted line) and of the sum of hourly UVB irradiance values (Wh/m2, green line, standard deviation not shown) was reported. Blue arrows indicate period of the year in which the UVB irradiance is apparently more effective in increasing serum vitamin D levels.

Because sun exposure and UVB in particular, is the main factor allowing vitamin D synthesis humans, data able to suggest new recommendations about sun exposure are needed.

In our work we measured serum vitamin D (25(OH)D) concentrations in male elderly subjects from central Italy, considering non-obese patients examined at the Urology clinic of our University Department. More than 50% of patients had serum 25(OH)D values in the deficient range (less than 20 ng/mL), and only 16% of subjects had serum vitamin D concentrations higher than 30

ng/mL (optimal range). The seasonal stratification of serum vitamin D concentrations revealed an important direct association with sun exposure, with the minimum mean value recorded in April and a maximum mean value obtained in September. Real measurements of UVB irradiance in the same period and region, when used in an appropriate mathematical model of expected vitamin D synthesis in the skin, revealed that in winter irradiance conditions resulted not sufficient to obtain the recommended serum doses of vitamin D. On the contrary, in summer, UVB irradiance was largely in excess to produce vitamin D in the skin. Indeed, only those subjects who declared to have spent a longer outdoor time in the previous summer demonstrated higher serum vitamin D levels in September, frequently also in the sufficient range of concentration of 25(OH)D.

Our results are in agreement with the hypothesis suggesting an obligate seasonal fluctuation of serum vitamin D concentrations at mid latitude and the need of a continuous sun exposure in summer in order to “recharge” the organism with sufficient amounts of vitamin D. In conclusion, sun exposure in summer should be reconsidered as a very important factor for good health, recommending to spend more time in the sun, avoiding excessive exposure, associated with discomfort or sunburn.

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