Are vitamins and oligoelements dangerous?

¿Las vitaminas y los oligoelementos son peligrosos?

Dear Sir,

Vitamins are essential organic compounds that the body does not manufacture. At very small dosages, they are essential for our metabolism. With the exception of vitamins D, K, B₃, B₁₂ and folic acid, all other vitamins must be obtained from our food intake. In contrast with liposoluble vitamins, hydrosoluble vitamins are not stored in the body and any excess thereof is eliminated in the urine. Hydrosoluble vitamins do not give rise to toxicity. Liposoluble vitamins are stored in the body, particularly the liver. Accordingly, from the pharmokinetic viewpoint, the preparations with both types of vitamins for chronic intermittent treatments such as age-related macular degeneration do not make sense.

In turn, oligoelements or trace elements are inorganic substances that are essential for hemostasis and physiology of our body. These are generally metals in very minute amounts.

ARMD is the most frequent cause of vision loss in elderly people in Spain and Western countries. As demonstrated in
numerous observational studies, the nutritional condition of patients is a risk factor associated to ARMD. In the AREDS study, patients with moderate risk or advanced ARMD in one eye who were treated with large doses of anti-oxidant vitamins and trace elements reduced the risk of progression in 25% after 5 years. In patients with early ARMD, the risk of developing advanced ARMD was of 1.3% at 5 years. For this reason, AREDS study supplements are not recommended to patients with less advanced stages of the disease.

We have recently seen a 39 year-old patient, without relevant history, who developed severe weakness, fatigue at the slightest effort and depression which coursed for several weeks. He was diagnosed with a hepatopathy (biopsy with cirrhosis areas) associated to prolonged intake of AREDS-like vitamin supplements, particularly vitamin A. Treatment with anti-oxidant vitamin supplements for prolonged periods can have side effects. Recent meta-analysis studies have suggested that the AREDS-like formulations can be associated to toxic effects. In March 2007, another meta-analysis suggested that vitamin A, vitamin E and beta carotenes can increase mortality.

A recent study established a relationship between multivitamins and prostate cancer, while another study found an increased risk of advanced prostate cancer in patients taking vitamin supplements more than 7 times a week. This association was particularly intense in patients with family history or men who took supplements including zinc, selenium or beta carotenes. The latter are not indicated for smokers (both active and passive) or former smokers who smoked more than 20 cigarettes a day. For these reasons these substances have been eliminated from AREDS II. In addition, beta carotenes exhibit a pro-angiogenic activity that facilitates the development of wet ARMD (and therefore would not be indicated either for non-smokers of advanced age). Zinc is related to Alzheimer’s disease and other cognitive disorders. Some studies establish a maximum tolerable dose for zinc of 40 mg, and recently it has been established that oral doses of zinc exceeding 25 mg are not absorbed and produce gastrointestinal toxicity, without mentioning the genital-urinary complications requiring hospitalization with zinc doses of 80 mg. It is surprising that the AREDS study stated that complications were hardly significant.

Genetic and dietary-genetic factors are important in the development of ARMD. The ophthalmologist has the opportunity of trying to modify some behaviors which can alter the genetic susceptibility of patients. Dietary control (glycemia index, cholesterol, low animal protein, dark-leaf vegetables, blue fish), exercise, weight watching and no smoking should come first and the use of supplements should only be considered subsequently. Until now there is no evidence that the population should take anti-oxidant supplements for preventing or delaying the onset of ARMD.

V. M. Asensio-Sánchez
Ophthalmology Dept., University Clinical Hospital, Valladolid.
Spain
E-mail: vasensio@orangemail.es

REFERENCES