

High levels of vitamin D in plasma protects against bladder cancer

October 30 2012

High levels of vitamin D are associated with protection against bladder cancer, according to a multidisciplinary study coordinated by molecular biologists and epidemiologists from the Spanish National Cancer Research Centre (CNIO), the conclusions of which are being published today in the *Journal of National Cancer Institute (JNCI)* .

The study has been led by Núria Malats, head of the Genetic and Molecular Epidemiology Group, and Francisco X. Real, from the Epithelial Carcinogenesis Group, at the CNIO.

The authors of the study took blood samples from more than 2,000 individuals—including patients with bladder cancer and control subjects free from the disease—in 18 Spanish hospitals, making of this the largest study carried out to-date in this field. "We have seen that those subjects with the highest levels of 25(OH)D3, a stable form of vitamin D in the blood, are those who showed the lowest risk of suffering bladder cancer. These results indicate that high levels of this vitamin are associated with protection from the illness or, similarly, that low levels are associated with a higher risk of suffering from it", says Malats.

"We have also shown, using in vitro molecular analysis, that vitamin D regulates the expression of a [protein](#)—FGFR3—that takes part in the development of bladder cancer", adds Real.

According to the study, this protective effect is more obvious in those patients with more aggressive cancers. "We observe that high levels of

vitamin D diminish, above all, the risk of developing [invasive bladder cancer](#) with low levels of FGFR3; which is to say those cancers with the highest probability of metastizing", says André FS Amaral, first author of the study.

The research results suggest that an increase in the dietary or supplementary intake of this vitamin, or via a controlled increase in [sun exposure](#), might be beneficial for the patient in terms of prevention and treatment.

More than 11,000 new cases each year in Spain

[Bladder cancer](#) represents a serious public health problem in many countries, especially Spain, where 11,000 new cases are registered each year, one of the highest rates anywhere in the world. In fact, it is the fourth most frequent type of tumour among Spanish males, after prostate, lung and colorectal cancers.

Following diagnosis, patients are continually observed with different follow-up techniques, among them cystoscopy, which requires the introduction of a small camera via the urethra to observe the bladder lining.

This type of follow-up affects the patients' quality of life and imposes heavy costs on healthcare authorities, thus further increasing the need to improve prevention strategies faced with this type of cancer.

Recent studies relate [vitamin D](#) levels with other types of cancer like breast or colon cancer. Despite this research, it is still not clearly understood which molecular routes are used by this vitamin to exercise its protective effect, or the role it plays in other types of tumours.

Provided by Centro Nacional de Investigaciones Oncologicas

Citation: High levels of vitamin D in plasma protects against bladder cancer (2012, October 30)
retrieved 19 April 2024 from

<https://medicalxpress.com/news/2012-10-high-vitamin-d-plasma-bladder.html>

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