First genetic factor in prostate cancer prognosis identified

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Patients with prostate cancer and hereditary mutations in the BRCA2 gene have a worse prognosis and lower survival rates than do the rest of the patients with the disease. This is the main conclusion to come out of a study published this week in the *Journal of Clinical Oncology*, in which David Olmos, Head of the Prostate Cancer and Genitourinary Tumours Clinical Research Unit at the Spanish National Cancer Research Centre (CNIO), has taken part in, along with Elena Castro, a member of the Unit, and British researchers at The Institute of Cancer Research and The Royal Marsden NHS Foundation Trust.

According to Olmos: "Whilst the majority of patients with prostate cancer have an excellent prognosis, one of the biggest challenges we face in daily clinical practice is the difficulty of identifying those patients in which the illness can be fatal".

In order to search for genetic markers that offer clues as to the evolution of the illness, the study's authors examined 61 patients with prostate cancer who were also carriers of mutations in the BRCA2 gene (a gene that suppresses tumours and that protects DNA), 18 patients with mutations in BRCA1 (a gene whose function is similar to BRCA2) and 1,940 patients in which the presence of mutations in both genes had been excluded.

The largest study to date

The magnitude of the study makes it one of the largest studies carried out so far in prostate cancer patients carrying BRCA1 or BRCA2 mutations; these genes are traditionally known for being responsible for familial breast and ovarian cancer syndrome.

Patient analyses showed that BRCA1 and BRCA2 gene mutation carriers were at greater risk for having more advanced prostate cancer at the time of diagnosis, as well as of developing metastasis.

Furthermore, within the subgroup of patients in which the disease had not spread at the time of diagnosis, 23% of carriers of mutations in these genes developed metastasis over the following five years, compared to 7% of those patients who were not carriers. Five years after diagnosis, 19% of BRCA2 mutation carriers with early-stage disease had died, compared with 4% of the non-carriers; there were no significant differences between BRCA1 mutation carriers and non-carriers.

Castro, the first author of the article, says: "These data turn the BRCA2 gene into the first genetic factor for prostate cancer prognosis", to which she adds: "The results of this study suggest the need for a paradigm shift in the clinical management of patients with prostate cancer who are carriers of mutations in the BRCA genes; current treatment standards for these patients appear to be insufficient and there are no specific action guidelines".

"Now that we have managed to identify patients with potentially lethal disease, our next challenge is to explore the most adequate treatments with the least side effects that have a real impact on survival", says Olmos.

Prostate cancer is the second most common type of cancer in men worldwide, although in developed countries it is the most frequently found tumour.

This is the case in Spain, where more than 25,000 new cases are diagnosed each year, making it the third cause of cancer-related deaths in men.

Over the past few decades, an increase in cases has been observed due, above all, to longer life expectancies and the widespread use of the PSA (Prostate-Specific Antigen) screening test in the general population. Fortunately, a decrease in mortality for this disease has also been observed, due to the majority of diagnoses being carried out at an early stage and due to improved treatments.

Even so, there are still cases in which the disease is fatal and efforts as well as resources are being dedicated to identifying those patients with the worst prognosis and to establishing the most appropriate therapeutic strategies.

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