ETHNIC DIFFERENCES

IN PROSTATE CANCER PROTEINS

by Cliff Dominy PhD

A multinational study has detected significant differences in the urinary proteins of men with prostate cancer. The report identified numerous discrepancies in the protein profiles of the men that appear to be associated with the participants' ethnicity. These findings could lead to the development of better biomarkers for the earlier treatment of prostate cancer in diverse ethnic groups.

THE FINDINGS SUGGEST THAT THERE MIGHT BE AT LEAST TWO DISTINCT PATHS TO DEVELOPING PROSTATE CANCER, ONE VIA THE IMMUNE SYSTEM AND THE SECOND THROUGH TESTOSTERONE.

Canadian and US-based researchers used high-sensitivity mass spectrometry techniques to identify the differences in 329 men diagnosed with localized prostate cancer. After accounting for factors such as age, tumor stage, and clinical markers of prostate cancer, one difference stood out - their ethnicity.

The study, which is undergoing peer-review (and therefore may be subject to revision), was led by Dr Thomas Kislinger of the Princess Margaret Cancer Centre in Toronto and his

collaborators at the Old Dominion University in Norfolk, Virginia, and the University of California in Los Angeles.

The background

The team aimed to investigate how genetics could influence the development of prostate cancer. Prostate cancer is typically identified by measuring elevated prostate-specific antigen (PSA) in the blood. Men of African ancestry carry twice the risk of developing the disease at every level of PSA when compared with other groups.

The study hoped to identify new biomarkers of prostate cancer for the earlier detection of the disease in these men. The best thing about their approach is that urine is plentiful, readily available, and can be obtained without a blood draw.

The study

Three hundred and twenty-nine men, who self-identified as either of African or European descent, were included in the investigation. 5400 proteins were detected in their urine, with levels that varied significantly between the two groups. After ruling out other factors such as age, disease stage or PSA levels, 110 proteins were linked to one factor - the men's ancestry.

The proteins were identified and separated into two broad classes - those involved with the immune response and those under the influence of testosterone. Men with African ancestry were more likely to show raised levels of the immune system proteins, whereas those of European descent tended to have elevated prostate

proteins, such as PSA. This second group of proteins were controlled by the male sex hormone, testosterone.

Different paths

The findings suggest that there might be at least two distinct paths to developing prostate cancer, one via the immune system and the second through testosterone.

Future plans

The study has identified some important new lines of prostate cancer research.

New clinical urinary markers can be identified and validated to better serve diverse ethnic populations. For example, the group reported that the protein named CTSG was low in men of African descent who had an aggressive form of prostate cancer, whilst the opposite was true in those of European descent.

Personalized therapeutic approaches will allow for the identification and treatment of the disease at a much earlier stage in its progression. In addition, identifying the genetic basis of prostate cancer risk may open up a future gene therapy approach.

Dr Kislinger and colleagues noted that, like many exploratory studies, the study sample size was relatively small. Furthermore, they could not exclude such factors as social inequities, diet quality, and lifestyle, that may have influenced their findings.

The group's plans include expanding the investigation to a more diverse patient population and developing new urine-based markers to better treat different populations.

The era of personalized medicine is fast approaching, and this research is an important step forward in improving patient outcomes in prostate cancer for everyone.

Reference

Ha A, Arbet J, Qiu Z, et al. Ancestry-Dependent Immunologic and Prognostic Effects Characterize the Prostate Cancer Urinary Proteome. Preprint. bioRxiv. 2025;2025.08.14.670396. Published 2025 Aug 19.