Performance of prostate cancer diagnoses in Auckland region during 2006-2013.

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Introduction

New Zealand is among the countries recording higher rates of prostate cancer incidence in the world. Whether this is due to better diagnoses or otherwise need assessment.

Methods

The NZ prostate cancer case (n=515) and control (n=572) cohorts were recruited between 2006-2013 from the Auckland region and clinical, health, lifestyle, and genetic factors were collected, and associated lifestyle, biomarker, and genetic risk factors were assessed. Diagnoses performance was assessed against two US cohorts (European American [US-EA] and African American [US-AA]) and two Taiwanese cohorts (advanced prostate cancer cohort [TW1] and localised prostate cancer cohort [TW2]) recruited during comparable time periods.

Results and discussion

The NZ prostate cancer case-control cohort comparison showed that risk increased in association with ever-tobacco smoking and lower serum Se levels. The risk was also associated with a panel of genetic polymorphisms including those in the antioxidant, androgen, and lipid metabolism pathway genes and those near putative oncogenes.

Compared to US cohorts, NZ cases, and controls recorded higher PSA levels at diagnosis and recruitment respectively. The Median Gleason sum score was the lowest among US-EA cases compared to other case cohorts. The percentage of NZ cases recording high-risk prostate cancer with a prognostic stage of $\geq$IIB was comparable with US-EA cases. However, the cumulative % of high-risk prostate cancer detection among NZ cases shows significantly lower diagnosis rates at lower PSA levels compared to both US groups. These delays were further compounded by smoking status and genetics.

NZ cases sub-cohort undergone radical prostatectomy (RP) showed lower over-diagnoses, and higher under-diagnoses rates compared to world averages. In addition, Māori and Pacific cases recorded poor prostate pathology features compared to other NZ ethnic groups. Poor mortality rates of this sub-cohort compared to averages seen internationally suggest that there is potential to improve the diagnosis and management of our patients.