

A review of studies examining the association between genetic biomarkers (short tandem repeats and single-nucleotide polymorphisms) and risk of prostate cancer: the need for valid predictive biomarkers

ABSTRACT

Prostate cancer (PCa) is a challenging polygenic disease because the genes that cause PCa remain largely elusive and are affected by several causal factors. Consequently, research continuously strives to identify a genetic marker which could be used as an indicator to predict the most vulnerable (i.e., predisposed) segments of the population to the disease or for the gene which may be directly responsible for PCa. To enhance the genetic etiology of PCa, this research sought to discover the key studies conducted in this field using data from the main journal publication search engines, as it was hoped that this could shed light on the main research findings from these studies, which in turn could assist in determining these genes or markers. From the research highlighted, the studies primarily used two kinds of markers: short tandem repeats or single-nucleotide polymorphisms. These markers were found to be quite prevalent in all the chromosomes within the research carried out. It also became apparent that the studies differed in both quantity and quality, as well as being conducted in a variety of societies. Links were also determined between the degree and strength of the relationship between these markers and the occurrence of the disease. From the studies identified, most recommended a larger and more diverse survey for the parameters which had not been studied before, as well as an increase in the size of the community (i.e., the population) being studied. This is an indication that work in this field is far from complete, and thus, current research remains committed toward finding genetic markers that can be used clinically for the diagnosis and screening of patients with PCa.

Keyword: Human genetics; Prostate cancer; Short tandem repeats; Single-nucleotide polymorphisms; X-chromosome; Y-chromosome