RISK FACTORS

Glutathione *S*-transferase polymorphism and prostate cancer

In recent years, glutathione *S*-transferase genotype has been extensively studied as a prostate cancer risk factor. Findings have been disappointingly inconsistent. Now, a large meta-analysis by Chinese researchers of 39 case–control studies has refined our understanding of how differences in these carcinogen-metabolizing enzymes influence the likelihood of developing this disease.

Of the three glutathione *S*-transferase loci studied, only polymorphism of *GSTM1* was found to be associated with prostate cancer risk. Data from across ethnic groups showed that homozygous deletion of *GSTM1*, which results in a nonfunctional enzyme, increased the likelihood of developing prostate cancer by about 30%. Polymorphisms of *GSTT1* and *GSTP1* did not seem to affect disease risk.

Subgroup analysis of data from the 7,984 cancer cases and 9,143 controls showed that the increased risk conferred by the *GSTM1* null genotype applied to Caucasian and Asian populations, but not to African/African-American men. Lead author Zengnan Mo from The First Affiliated Hospital of Guangxi Medical University notes, however, that "the stability of the results of any meta-analysis is affected by the heterogeneity of studies included, so the interpretation of [these] results should be cautious."

The clinical significance of the *GSTM1* polymorphism has not yet been determined. "A large-scale study of thousands of participants involving tissue-specific biochemical and biological characterizations needs to be done to study this in more detail," Mo concludes.

Kathryn Senior

Original article Mo, Z. *et al.* An updating meta-analysis of the *GSTM1*, *GSTT1*, and *GSTP1* polymorphisms and prostate cancer: a HuGE review. *Prostate* **69**, 662–688 (2009).