The p53Pro72Arg Polymorphism is Associated with Albuminuria among Aboriginal Australians

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ABSTRACT

Albuminuria is a widely recognized marker of renal disease and cardiovascular risk. This is especially true in Aboriginal Australians living in remote communities who suffer high rates of end-stage renal disease and cardiovascular mortality. During a survey of risk factors for renal and cardiovascular disease in one such community, an association between a common polymorphism at codon 72 (Arg/Pro) of the p53 gene and markers of renal disease was sought. A cross-sectional community survey including 217 people was performed. Genotypes of the polymorphism were distributed in Hardy-Weinberg equilibrium, with p53Arg allele frequency of 0.45 (range, 0.41 to 0.50). Overall prevalence of albuminuria was high (31% microalbuminuria; 14% overt albuminuria). Urine albumin/creatinine ratio (ACR) was significantly associated with the number of p53Pro alleles (P = 0.01), and there was an interaction with tobacco smoking (P = 0.04). The p53 genotype was also associated with increasing HbA1c, but the relationship between p53 and ACR was independent of this. This is a previously unreported association. This study does not address the mechanism, but this finding, if confirmed, expands the described effects of p53 in cellular proliferation and apoptosis to include a role in the course of renal and possibly cardiovascular disease in this population.

Keywords: albuminuria; renal disease; cardiovascular disease; risk factors; Aboriginal Australians

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