THE INFLUENCE OF GENETIC POLYMORPHISMS ON THE RISK OF DEVELOPING ASBESTOSIS

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Background and Aims: Relatively little is known about the genetic factors that may influence the development of asbestosis. The aim of this study was to investigate whether common functional polymorphisms in *GSTT1*, *GSTM1*, *GSTP1, MnSOD*, *ECSOD*, *CAT* and *iNOS* genes represent risk factors for developing asbestosis in workers occupationally exposed to asbestos.
Methods: The study included 262 cases with asbestosis and 265 controls with no asbestos-related disease. Data on cumulative asbestos exposure were available for all subjects. PCR based methods were used to genotype *GSTM1*-null, *GSTT1*-null, *GSTP1* Ile105Val and Ala114Val, *MnSOD* Ala −9Val, *ECSOD* Arg213Gly, *CAT* −262C>T and *iNOS* $(CCTTT)_n$ polymorphisms. Logistic regression analysis was used to assess asbestosis risk.
Results: The OR of asbestosis was 3.21 (95%CI 2.43–4.23) for cumulative asbestos exposure, 1.01 (95%CI 0.71–1.43) for *GSTM1*-null; 0.61 (95%CI 0.40–0.94) for *GSTT1*-null; 1.52 (95%CI 1.08–2.15) for *GSTP1* 105Ile/Ile versus 105Ile/Val and 105Val/Val; 0.97 (95%CI 0.64–1.48) for *GSTP1* 114Ala/Ala versus 114Ala/Val and 114Val/Val; 1.50 (95 %CI 1.01–2.24) for *MnSOD* −9Ala/Ala versus Ala/Val and Val/Val; 1.63 (95%CI 0.62–4.27) for *ECSOD* 213Arg/Gly versus Arg/Arg ; 1.36 (95%C 0.70–2.62) for *CAT* −262TT versus CT and CC; and 1.20 (95%CI 0.85–1.69) for *iNOS* LL versus SL and SS. The associations between *MnSOD* Ala −9Val polymorphism and asbestosis risk and between *iNOS* $(CCTTT)_n$ and asbestosis were modified by *CAT* −262C>T polymorphism (p=0.038; p=0.031, respectively).
Conclusions: Our study showed that *GSTP1* 105Ile/Ile and *MnSOD* −9Ala/Ala genotypes significantly increase the risk of developing asbestosis, whereas a protective effect was found for *GSTT1*-null genotype. A strong interaction was observed between *MnSOD* Ala −9Val and *CAT* −262C>T, as well as between *iNOS* $(CCTTT)_n$ and *CAT* −262>T polymorphisms. The findings suggest that in addition to asbestos exposure, genetic factors may also have an important influence on developing asbestosis.