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A systematic review and meta-analysis of the association between OGG1 Ser326Cys polymorphism and cancers.

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Abstract

The oxyguanine glycosylase 1 (OGG1) gene has an important role in DNA repair, and the polymorphism of the gene may alter cancer susceptibility. This study aims to examine the association between the OGG1 Ser326Cys polymorphism and cancer risk based on meta-analysis. Relevant studies were identified through a search of PubMed and Weipu databases, and a total of 109 studies including 111 comparisons containing 34,041 cases and 42,730 controls were enrolled. Overall, significant association was observed between OGG1 Ser326Cys polymorphism and cancer risk in all genetic models except for heterozygote model (Cys/Cys + Cys/Ser vs Ser/Ser: OR 1.071, 95 % CI 1.019-1.125; Cys/Cys vs Cys/Ser + Ser/Ser: OR 1.159, 95 % CI 1.076-1.248; Cys/Cys vs Ser/Ser: OR 1.202, 95 % CI 1.105-1.308). In stratified analysis by cancer type, significantly increased cancer risk was observed in digestive system cancer, head and neck cancer and lung cancer. For gynecologic cancer, significantly increased cancer risk was also observed in homozygote model (OR 1.974, 95 % CI 1.254-3.107). In addition, in stratified analysis by ethnicities, increased cancer risk was found in Asians (Cys/Cys vs Cys/Ser + Ser/Ser: OR 1.195, 95 % CI 1.088-1.313; Cys/Cys + Cys/Ser vs Ser/Ser: OR 1.115, 95 % CI 1.045-1.190; Cys/Cys vs Ser/Ser: OR 1.273, 95 % CI 1.149-1.410). The OGG1 Ser326Cys polymorphism may be a risk factor for cancers of lung, digestive system and head and neck.

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