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Polymorphisms in the MTHFR and VDR genes and skin cancer risk.

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Source

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Abstract

Folate and vitamin D have been shown to be influenced by ultraviolet (UV) radiation. UVA radiation can break down plasma folate, whereas vitamin D can be synthesized in UVB-exposed skin. Folate metabolism is involved in DNA synthesis and repair, and vitamin D processes anti-proliferative effects. The functions of both nutrients are implicated in skin carcinogenesis. We evaluated genetic polymorphisms in the methylenetetrahydrofolate reductase (MTHFR) gene (C677T and A1298C) and the vitamin D receptor (VDR) gene (Fok1, Bsm1 and Cdx2) with skin cancer risk in a nested case-control study within the Nurses' Health Study [219 melanoma, 286 squamous cell carcinoma (SCC), 300 basal cell carcinoma (BCC) and 873 controls]. No significant associations were observed for the two MTHFR polymorphisms on skin cancer risk. We observed an interaction between the C677T polymorphism and total folate intake on SCC risk (P, interaction=0.04); the highest risk was observed among women with TT genotype and low folate intake (OR=2.14; 95% CI=1.01-4.50). The VDR Bsm1 BB genotype was significantly associated with an increased SCC risk (OR=1.51; 95% CI=1.00-2.28). An interaction between the Bsm1 polymorphism and total vitamin D intake on SCC was observed, with the highest risk seen in women with the BB genotype and high vitamin D intake (OR=2.38; 95% CI=1.22-4.62) (P, interaction=0.08). **This study suggests a possible role of the polymorphisms in MTHFR and VDR interacting with dietary intakes of folate and vitamin D in skin cancer development, especially for SCC.** Due to a large number of comparisons and tests, the possible associations should be interpreted with caution and confirmed by other studies.

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