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Effect of Smoking on Different Histotypes of Kidney and Urinary Tract Cancer in Women

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Introduction: It is known that smoking is associated with an increased risk of cancers of the kidney and urinary tract, but few epidemiological studies have sufficient cases to explore heterogeneity between histological tumour types and sites.

Methods: Study participants completed a questionnaire on reproductive, anthropometric, and lifestyle factors, including smoking, at recruitment in 1996–2001, and were followed for cancer and death via national registries. Using Cox regression models, we estimated relative risks (RRs) of cancers of the kidney and urinary tract associated with current versus never smokers, adjusted for potential confounders.

Results: In 1,242,530 women without previous cancer, 4251 cancers of the kidney (including renal pelvis) had accrued after an average of 15.4 years of follow-up. Smoking was associated with an increased risk of kidney cancer, but this differed significantly by tumour histotype. Current versus never smoking was associated with a 50% increased risk of renal cell carcinomas (RCCs, n=3271; RR=1.54, 95% CI: 1.41-1.68), and a larger, three-fold risk, of transitional cell carcinomas (TCCs, n=330; RR=3.34, 95% CI: 2.56-4.35); heterogeneity by histotype, p<0.0001. Current smoking was also associated with some 3-4 fold increased risks of TCCs of the ureter (n=185; RR=4.33, 95% CI: 3.03-6.20) and bladder (n=2344; RR=3.29, 95% CI: 2.97-3.63).

Conclusions: While smoking is known to increase the risk of renal cancer, there are substantial differences in the magnitude of the risk by histotype. TCCs in different parts of the urinary tract show consistently stronger associations with smoking than RCCs.