Influence of occupational risk factors on the development of renal cell carcinoma in the Saar-Pfalz region

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Introduction

Associations between the development of renal cell carcinoma and occupational risk factors in the Saar-Pfalz region?
- Benzoapyrene (polycyclic aromatic hydrocarbon, mainly in hypoxic burning of organic material)?
- Trichlorethylene “TRI” (solution agent)?

Materials and Methods

Retrospective case-control study (1995-1997)

n = 249 patients with renal cell carcinoma, of whom 42 patients were randomly selected

Case: n = 42 patients with renal cell carcinoma
Control: n = 42 patients with urolithiasis
- matched in age, sex and home town
- exclusion of renal cell carcinoma in the control group by ultrasound

Data from structured interviews focusing on the following issues:
- general medical history
- family medical history
- occupational history (including all jobs with a minimum employment of one year)

Estimation of the individual risk by an expert-rating:
- for polycyclic aromatic hydrocarbons: „BK-Report: BaP-Jahre“ (HVBG, 02/99)
- for trichlorethylene: according to the publication of Vamvakas¹

Included as confounders: all factors that altered the odds ratio more than 10%:
- BMI (body mass index)
- daily fluid intake
- exposure with other agents
- medication
- associated diseases

Results were gained by logistic regression and adjustment of age, sex and nicotine consumption (exclusion of female patients because of limited sample size)

Results

Significant risk factors are:
- daily fluid intake < 1 liter (p=0.02)
- smoking (p=0.03)

Risk increasing factors are:
- high blood pressure > 15 years
- trichlorethylene in rising doses and time of exposure
- polycyclic aromatic hydrocarbon exposure in combination with further risk factors
- exposure with agents of the metal-working industry and with building materials > 30 years

No correlation between renal cell carcinoma and alcohol, diabetes mellitus, obesity and cardiovascular risk factors

Conclusion

Male smokers in Saar-Pfalz region with a small daily fluid intake have a significant increased risk for the development of renal cell carcinoma.

The exposure with trichlorethylene is a risk factor.