

History of allergic disease and epilepsy and risk of glioma and meningioma (INTERPHONE study group, Germany)

Gabriele Berg-Beckhoff · Joachim Schüz ·
Maria Blettner · Eva Münster · Klaus Schlaefer ·
Jürgen Wahrendorf · Brigitte Schlehofer

Received: 16 December 2008 / Accepted: 20 May 2009
© Springer Science+Business Media B.V. 2009

Abstract The aim of the present analysis was to examine the association of a medical history of asthma, hay fever, eczema, or epilepsy with the risk of glioma and meningioma. Data of a German population-based case-control study included 381 meningioma cases, 366 glioma cases, and 1,494 controls. Participants' histories of asthma, hay fever, eczema, and epilepsy and the respective ages at onset were asked during a personal interview. A small inverse association between allergic condition and both glioma (odds ratio: 0.92; 95% CI: 0.70–1.22) and meningioma (odd ratio: 0.87; 95% CI: 0.66–1.14) was found. For glioma, this inverse association was more pronounced in persons reporting to have asthma compared to other allergic conditions. The positive association between epilepsy and particularly glioma suggests that epilepsy is an early

symptom of the disease. As the association was seen also for epilepsies occurring more than a decade before the diagnosis of glioma, this might indicate either an aetiological role of epilepsy, or a relatively long preclinical phase. In conclusion our study confirms previous findings of case control studies but not those from cohort studies. However, possible selection bias in case control studies might not explain the different results in its entirety.

Keywords Allergy · Asthma · Epilepsy · Hay fever · Eczema · Glioma · Meningioma · Brain tumour · Case control study

Introduction

Different medical conditions have been suggested to play a role in the aetiology of primary brain tumours. Allergic diseases, infectious agents or the respective immunologic responses and some hereditary syndromes were reported to be associated with glioma and meningioma [1–5].

Medical history of allergies was found to be inversely associated with the occurrence of glioma but not with the occurrence of meningioma in adults [6, 7]. A meta-analysis of cohort and case-control studies, pooled relative risk estimates for persons with a history of any allergic disease compared to persons not having such a disease reported for glioma an odds ratio of 0.61 (95% confidence interval (CI): 0.55–0.67) and for meningioma an odd ratio of 0.84 (95% CI 0.72–0.98) [6]. A recent comprehensive case-control study including the Nordic and UK part of the Interphone study which was not considered in the meta-analysis confirmed these results [8]. Cohort studies revealed different results. The results of the three cohort studies mentioned by Schwartzbaum et al. [9] are ambiguous, even though the

G. Berg-Beckhoff
Department of Epidemiology and International Public Health,
School of Public Health, University of Bielefeld, Bielefeld,
Germany
e-mail: gabriele.berg-beckhoff@uni-bielefeld.de

J. Schüz · M. Blettner · E. Münster
Institute of Medical Biostatistics, Epidemiology and Informatics,
University Medical Centre, Johannes Gutenberg-University
Mainz, Mainz, Germany

J. Schüz
Institute of Cancer Epidemiology, Danish Cancer Society,
Copenhagen, Denmark

E. Münster
Institute of Occupational, Social, and Environmental Medicine,
Johannes Gutenberg-University of Mainz, Mainz, Germany

K. Schlaefer · J. Wahrendorf · B. Schlehofer (✉)
Unit of Environmental Epidemiology, German Cancer Research
Center, Im Neuenheimer Feld 280, 69120 Heidelberg, Germany
e-mail: b.schlehofer@dkfz-heidelberg.de