

Chronic stress in nonelderly caregivers Psychological, endocrine and immune implications

Kavita Vedhara^{a,*}, Michael P. McDermott^b, Thomas G. Evans^c, John J. Treanor^c, Sue Plummer^d,
Deborah Tallon^a, Kim A. Cruttenden^e, Giovanni Schifitto^e

^aMRC Health Services Research Collaboration, Department of Social Medicine, University of Bristol, Canynge Hall, Whiteladies Road, Bristol BS8 2PR, UK

^bDepartment of Biostatistics, University of Rochester, Rochester, NY, USA

^cDepartment of Medicine and Infectious Diseases Unit, University of Rochester, Rochester, NY, USA

^dCultech Ltd., Swansea, UK

^eDepartment of Neurology, University of Rochester, Rochester, NY USA

Received 4 September 2001; accepted 25 January 2002

Abstract

Objective: This investigation examined whether the immune dysregulation that characterises elderly informal caregivers (e.g., spousal caregivers of dementia patients) extends to a younger caregiver population, specifically spousal carers of patients with multiple sclerosis (MS). **Method:** MS spousal caregivers ($n=41$, mean age 43 years, 14 women, 27 men) and noncaregiving controls ($n=62$, mean age 33 years, 44 women, 18 men) were recruited. Psychological morbidity (i.e., self-reported stress, anxiety and depression), endocrine activity (i.e., salivary cortisol and DHEAs)

and immunity (i.e., IgG and HAI responses to influenza vaccination and IFN- γ and IL-4 levels) were assessed. **Results and Conclusions:** MS caregivers and noncaregivers did not differ significantly in their IgG or HAI responses to influenza vaccination or in levels of IFN- γ and IL-4. However, it remains unclear whether the “preserved” immune response of these younger caregivers was due to (1) an absence of immune senescence, (2) a relative absence of psychological morbidity, or both. © 2002 Elsevier Science Inc. All rights reserved.

Keywords: Antibody titers; Chronic stress; Influenza; Informal caregivers; Multiple sclerosis

Introduction

Chronic caregiver stress has been associated with alterations in both endocrine and immune function. Much of this work has been conducted with elderly caregiver populations, such as spousal caregivers of dementia patients [1,2]. The present study was designed to extend this literature by examining whether comparable alterations in endocrine and immune function occur in a younger spousal caregiver group, namely spousal caregivers of patients with multiple sclerosis (MS).

Research with elderly caregiver groups has documented a wide range of immune alterations including impairments in

T cell proliferation, natural killer (NK) cell numbers and activity and elevations in herpesvirus antibody titers [3–5]. Of particular interest, however, is the research that has examined the consequences of chronic caregiver stress on the immune response to naturalistic pathogens. The significance of such work lies in the fact that it permits conclusions to be drawn about the potential clinical relevance of observed immune alterations. Kiecolt-Glaser et al. [1] were the first to adopt this approach with spousal caregivers of dementia patients. They examined the response of this population to influenza vaccination and observed that significantly fewer caregivers compared with controls generated a clinically appropriate response to the vaccination (as denoted by a fourfold increase in antibody titers to at least one of the viral strains present in the vaccine). These results indicated that chronic elevations in stress can lead to impairments in immunity, but also to increased vulnerability to infectious disease.

* Corresponding author. Tel.: +44-117-928-7243; fax: +44-117-928-7236.

E-mail address: k.vedhara@bris.ac.uk (K. Vedhara).

These results were extended further in a recent study also with spousal caregivers of dementia patients and noncaregiver controls [2]. In addition to evidence of an impaired antibody response to influenza vaccination in the caregivers, the data were also suggestive of an inverse relationship between HPA axis activity and the response to vaccination. Thus, the HPA axis was implicated as one possible mediating mechanism.

It is evident, therefore, that chronic caregiver stress is associated with significant impairments across several immune parameters. Furthermore, these changes are suggestive of an increased vulnerability to infectious disease. However, as noted previously, the preponderance of enquiry in this area has been on the immune changes observed in elderly caregivers. Elderly caregivers are, however, a unique population, experiencing a natural waning of their immune systems as a function of their advancing age, so-called immune senescence [6]. Thus, the impact of stress-related immune impairment may be greater in the elderly as it may be compounded by their underlying immune senescence. It is, therefore, appropriate to consider whether the nature of the immune alterations observed in elderly caregivers is generalisable to other caregiver groups not contending with underlying immune impairment.

The present study examined this issue. As much of the work in this field has involved elderly spousal caregivers of dementia patients, we sought to identify a caregiver population in which (i) the chronicity of the caregiving task would be comparable to that experienced by spousal caregivers of dementia patients and (ii) the relationship between caregiver and care recipient would also be consistent with this group. We chose, therefore, to focus on spousal caregivers of MS patients. MS is a chronic and disabling illness characterised by physical and cognitive complications. In addition, caring for a patient with MS has been shown to have adverse consequences for the emotional well being of the caregiver [7,8]. Furthermore, as with caregivers of dementia patients, the spouse is typically the primary caregiver for the majority of MS patients [9].

It was expected that, consistent with existing evidence on spousal caregivers of dementia patients, spousal caregivers of MS patients would report greater psychological distress and exhibit higher levels of cortisol and lower levels of DHEAs in saliva than noncaregivers. However, because of the younger age of MS caregivers and the associated absence of immune senescence, we sought to examine the extent to which immune responses to influenza vaccination would be impaired.

Method

Participants

Forty-one MS spousal caregivers (14 women, 27 men) were recruited from an outpatient MS clinic where their

partners were registered. Sixty-two noncaregivers (44 women, 18 men) were recruited from the same hospital through the hospital's annual influenza vaccination programme. The following inclusion/exclusion criteria were applied for caregivers: aged between 25 and 55 years; consider themselves their partner's primary carer; have no other caregiving responsibilities (e.g., ageing relative, disabled child, etc.); have no or only limited professional assistance with their caregiving role; spouse to have been diagnosed with MS for a minimum of 3 years; have not received an influenza vaccine in the previous year; not have any chronic coexisting illnesses (e.g., coronary disease, diabetes, hypertension, asthma, etc.) or concurrent psychiatric illness; not reporting alcohol or other substance abuse; not allergic to influenza vaccine. Noncaregivers were recruited according to the same inclusion/exclusion criteria. The only difference between the groups concerned the caregiving role, i.e., all noncaregivers should not be caring for anyone with a chronic illness in order to be eligible.

As a result of the above criteria, none of the participants in either group had received an influenza vaccination in the previous 12 months.¹ Information on vaccines before that time was, however, documented. This revealed that 24 months prior to study entry, 9 (22%) caregivers and 14 (23%) noncaregivers had received the influenza vaccination ($\chi^2=0.29$, $p=.86$); and that 36 months prior to study entry, 10 (24%) caregivers and 15 (24%) noncaregivers had received the influenza vaccination ($\chi^2=0.83$, $p=.66$). Taken together, the two groups did not differ in the number who had ever received an influenza vaccination previously (49% vs. 43%: $\chi^2=0.38$, $p=.54$). Thus, the groups were well matched in terms of their vaccination histories.

Methods and procedures

Following informed consent, participants were given psychological questionnaires (psychosocial assessment) and containers to provide saliva samples (hormonal assessment). Participants were asked to complete the questionnaires and provide the saliva samples a few days prior to their next scheduled visit to the study site (Time 0). At Time 0, completed questionnaires and saliva samples were returned, a blood sample was taken from all participants (immune assessment) and participants received an influenza vaccination. Approximately 28 days later (Time 1), the next and final study visit occurred, during which a second blood sample was taken (immune assessment). All questionnaire markings and hormonal and immune assays were conducted by researchers blind to the participant's status (i.e., caregiver or noncaregiver).

¹ As previous vaccination cannot account for previous exposure to flu antigens, these data were not included as covariates in the analyses.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات