

Gender-Difference In Association Between Selenium And Asthma

Tine H Mallings¹, Yoji Deguchi², Lars R Skadhauge³, Torben Sigsgaard⁴, Øyvind Omland^{1,4} and the RAV group.

¹Department of Occupational Medicine, Aalborg Hospital, Århus University Hospital, Aalborg, Denmark; ²School of Nursing, Faculty of Medical Sciences, University of Fukui, Japan;

³Department of Occupational and Environmental Medicine, Hospital of Southern Jutland, Haderslev, Denmark, and ⁴Institute of Public Health, University of Århus, Århus, Denmark.

Methods:

Study population:

In a cross-sectional Danish multicenter-study of asthma (ECRHS protocol) 1,191 subjects aged 20-44 years were enrolled .

Cases of asthma was defined as (n=131):

Positive answer to at least one of the following questions (current asthma):

- “Have you been woken by an attack of shortness of breath at any time in the last 12 months?”.
- “Have you had an attack of asthma in the last 12 months?”
- “Are you currently taking any medicine (including inhalers, aerosols or tablets) for asthma?”.

In combination with bronchial hyperresponsiveness (BHR).

- BHR: 20% decrease in FEV¹ at methacholine challenge, cumulative dose 2 mg

Controls was defined as (n=619):

Randomly selected subjects without positive answer to any of the above mentioned questions.

Selenium:

Analyses of selenium in serum used the AOAC (Association of Official Analytical Chemists) modified fluometric method validated for investigations of selenium in organic material.

Smoking:

Self-reported information on current, former, or never smoking, where distinction between current and former smokers was one month prior to examination.

Atopy:

At least 1 of 13 positive skin prick test mean diameter ≥ 3mm

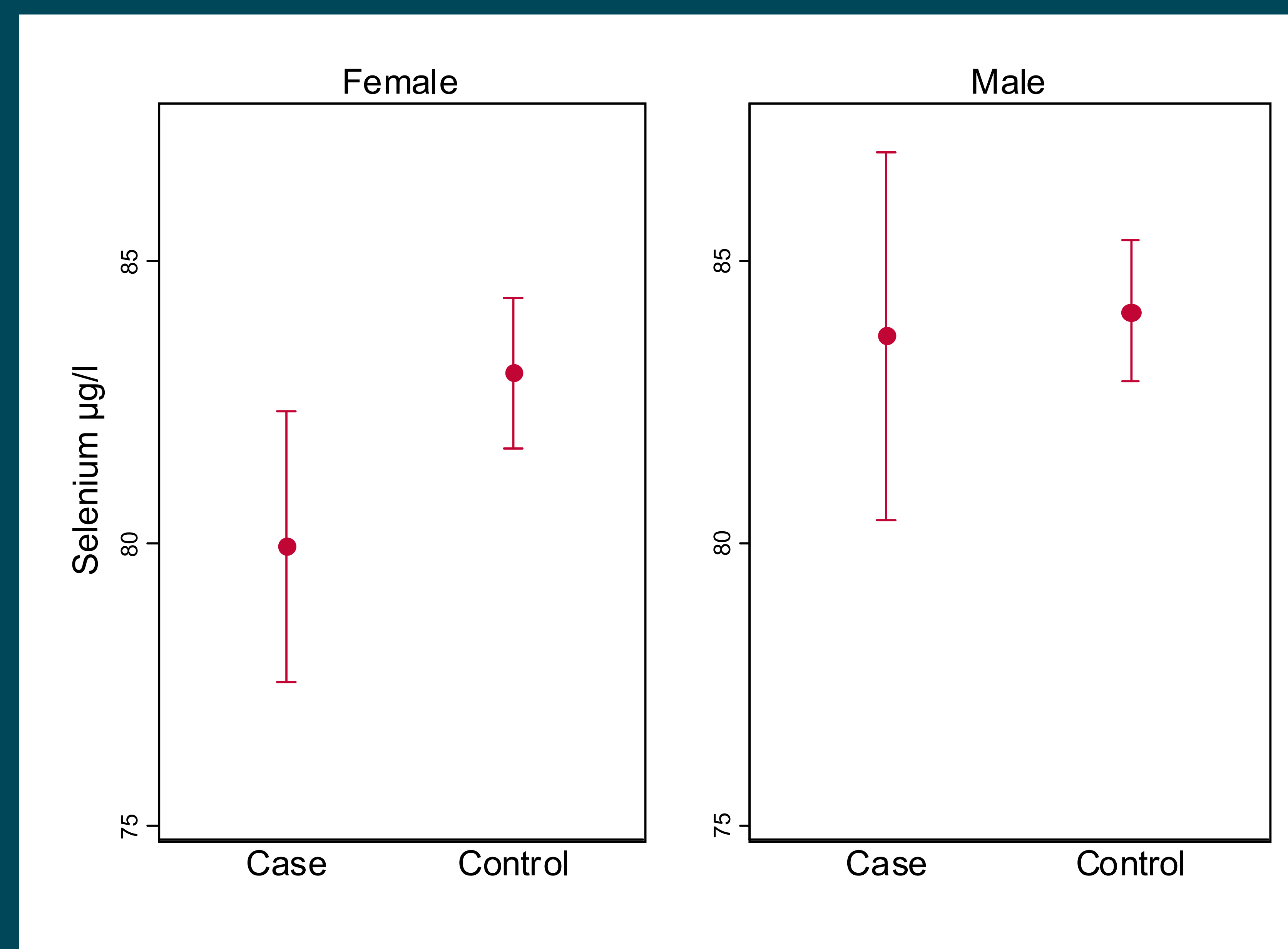


Figure 1 Unadjusted serum selenium concentration (µg/l, mean and 95% CI) in asthmatic and non-asthmatic males and females.

Table 1. Characteristics of study population n=750

| | Female | Male |
|-----------------------|-------------|-------------|
| Mean age, years (SD) | 34.4 (7.2) | 35.0 (6.9) |
| Current asthma, n (%) | 77 (20) | 54 (15) |
| BHR, n (%) | 132 (34) | 74 (20) |
| Selenium, µg/l (SD) | 82.4 (11.6) | 84.0 (11.4) |
| Atopy, n (%) | 125 (32) | 148 (41) |
| Smoking | | |
| Never, n (%) | 208 (54) | 219 (60) |
| Former, n (%) | 66 (17) | 48 (13) |
| Current, n (%) | 110 (29) | 98 (27) |

Aim:

To analyse associations between serum selenium and asthma including analyses in the genders separately.

Results:

Demographic data for study population is shown in table 1

Selenium was insignificantly lower in females compared to males (p=0.05)

Selenium was inversely associated to current asthma with BHR in females (figure 1), difference 3.1 µg/l (95 % CI: 0.2- 6.0, p=0.04). Adjusted for age, smoking, atopy, and study center the difference was 4.1 µg/l (95 % CI: 1.0 - 7.2, p=0.009).

No association between asthma and selenium in males

Conclusion:

Serum selenium concentration was inversely associated to asthma in young Danish females, but no association was seen in males.

Acknowledgement:

D Sherson, J Baelum, G Thomsen, L Kjølner

Fund providers:

Danish Lung Association, West Danish Research Forum for Health Science, Spar Nord Foundation, and Herta Christensens Foundation.