Appendix S1

MATERIALS AND METHODS

Ethical statement

This study was accepted by the ethics committee of region Zealand (project number SJ-191, SJ-113, SJ-114) in Denmark. Written informed consent was obtained from all study participants.

Study design

A cross-sectional study of the association of HS (referred to as the exposure) and renal function (referred to as the outcome) was conducted. We investigated 2 different HS-groups; (*i*) An HS group identified in the general population (referred to as the population HS group); (*ii*) An HS group identified in a hospital (referred to as the hospital HS group).

Exposure. The population HS group was identified in The Danish General Suburban Population Study (GESUS), which was initiated in January 2010, and enrolled participants until October 10 2013. It was a cross-sectional study of the adult Danish general suburban population in Naestved Municipality (70 km south of Copenhagen) (12). All citizens aged 30+ and a random selection of those aged 20–30 years were invited. The population HS diagnosis was based on a questionnaire where the diagnosis of HS was made if participants reported (*i*) boils within the previous 6 months as well as (*ii*) a minimum of 2 boils (in 5 possible locations: axilla, groin, genital areas, mamma, other e.g. perianal, neck, abdomen). The validation of the population HS diagnosis was discussed in a separate paper showing a sensitivity of 90%, and a specificity of 97% (7). The overall participation rate in GESUS was 49%. Further details about GESUS can be found in Bergholdt et al. (12).

The hospital HS group was recruited from the outpatient clinic at the Department of Dermatology at Roskilde Hospital in Denmark (serving the region of Zealand which includes Næstved). Inclusion criteria were the WHO International Classification of Diseases (ICD) code, edition 10 (ICD-10) of HS (L73.2), and undergoing either systemic or laser treatment for HS indicating moderate/severe disease. The diagnosis of the hospital-based HS group was verified by physical examination by a physician from the Department of Dermatology. The hospital-based HS group underwent the same examination and filled out the same questionnaire as the population HS group. The participation rate for the invited hospital HS group was 34%. The distribution of age and sex did not differ between participants and non-participants (data not shown).

Both the hospital- and population-based HS group were compared to a control group (referred to as the non-HS group) defined as participants from GESUS without HS.

Outcome. Creatinine (μmol/l) levels were measured in non-fasting venous blood samples of all participants. Renal function was assessed by estimated Glomerular Filtration Rate (eGFR) using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation in ml/min per 1.73 m^2 body surface. The eGFR-CKD-EPI equation is based on information of sex, ethnicity, creatinine and age (13). The Danish civil registration number provided information on sex and age. Ethnicity was self-reported. A detailed description of methods in GESUS has previously been published (12).

We reported eGFR levels according to Chronic Kidney Disease (CKD) stages using the accepted CKD-classification; however, not containing information of proteinuria as we did not perform urine analysis: CKD1: eGFR >=90 ml/min/1.73 m^2, CKD2 (mild): eGFR 60–89 ml/min/1.73 m^2, CKD3 (moderate): eGFR 30–59 ml/min/1.73m^2, CKD4 (severe): eGFR 15–29 ml/min/1.73 m^2, and CKD5 (kidney failure): eGFR <15 ml/min/1.73 m^2.

Statistical analyses

Estimated GFR. The outcome eGFR was continuous, and a mean for the HS group and the non-HS group was computed, respectively, as well as the mean difference (MD) with 95% confidence intervals (95% CI). We performed 3 statistical models: 1) an unadjusted (crude) MD (95% CI) and 2) an age, sex and smoking-status adjusted MD (95% CI) using linear regression (General Linear Model: GLM procedure/ Dunnett-Hsu method), and 3) a full model adjusted for age, sex, smoking-status, body mass index (BMI), hypertension and diabetes. The third model was made to accommodate the possible confounders of BMI, hypertension, and diabetes; all known to potntially influence renal function. The tests were two-sided with a significance level at 0.05. All analyses were performed using SAS 9.3.

We also made stratified analyses of eGFR levels according to the CKD Classification. We performed Fischer's exact test with Monte Carlo estimation to find a *p*-value for the differences in CKD stages when comparing the HS group and the non-HS group.

HS Severity. The definition of severity of HS for the population HS group was based on self-reported information on number of boils/locations of boils, and subsequent scarring, and was inspired by the Hurley score (13). Mild HS: minimum 2 boils and no subsequent scarring, moderate HS: minimum 2 boils and subsequent scarring, and severe HS: minimum 2 boils in minimum 2 locations and subsequent scarring. The severity of HS for the hospital HS group was assessed by the Sartorius score based on physical examination (13). Furthermore, we explored the severity of HS as number of boils. Subgroup analysis of eGFR was performed according to the 3 HS severity degrees, and a one-way ANOVA was used to detect a potential association between the 3 degrees of HS severity and eGFR. Linear regression was used to detect a possible association between eGFR and number of boils as well as Sartorius score, respectively.

Background factors and possible confounders. Age and sex was identified via the Danish Civil Registration Number. Smoking was self-reported. The possible confounders of BMI (measured height and weight and subsequently calculated from the formula of weight/height × height), hypertension (measured blood pressure ≥ 140/90 or self-reported antihypertensive drugs), and diabetes (defined by non-fasting blood glucose/HbA1c above threshold or self-reported diabetes) were identified.