FRI0670

HOW DO GOUT-RELATED COMORBIDITIES AND LIFESTYLE FACTORS CLUSTER IN A LARGE HEALTH SURVEY OF THE GENERAL POPULATION? – RESULTS FROM THE MALMÖ PREVENTIVE PROJECT COHORT IN SOUTHERN SWEDEN

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Background: Several factors (comorbidities and lifestyle) have been shown to be associated or predict hyperuricemia or gout. Since these factors often are closely associated with each other, they may represent a few pathophysiological pathways rather than being individually important predictors. Identifying clusters of such factors may thus lead to a better understanding of the pathways involved in increased risk of gout. Two studies have previously indicated four to five phenotype clusters in prevalent cohorts of gout patients of European ancestry^{1,2}. However, identification of clusters of gout-associated factors in the general population is lacking.

Objectives: To identify clusters of gout-related baseline comorbidities and lifestyle factors among participants in a population-based health survey.

Methods: The Malmö Preventive Project is a screening program for cardiovascular risk factors, alcohol abuse and breast cancer in Malmö, Sweden. Overall, 33,346 individuals (67% male, mean age 45.7 years at inclusion) participated. The study population was screened between 1974 and 1992. A subset of 22,057 individuals (screening period: 1975-1992) was eligible for the cluster analysis. Agglomerative hierarchical cluster analysis was performed to group similar variables and subgroup individuals with similar characteristics, using principal component and Ward's minimum variance methods in Rv3.5.2, respectively. Variables selected to cluster were obesity (BMI>30 kg/m²), renal dysfunction (eGFR<60 mL/min/1.73m²), diabetes mellitus (DM), hypertension, prevalent cardiovascular disease (CVD), dyslipidemia (abnormal cholesterol or triglyceride values), pulmonary dysfunction (PD, FEV₁/FVC on spirometry<0.7%), smoking and use of diuretics.

Results: Overall, 66% of the participants in the cluster analysis were males, mean age was 47 years and mean body mass index 24. Clustering of comorbidities and lifestyle factors indicated three pathways i.e. 1) mainly cardiovascular risk factors and disease, 2) variables associated with insulin resistance and 3) variables associated with PD (Fig; A).

Fig Results of cluster analysis illustrating (A) variable and (B) observation clustering

Five different clusters (C1 to C5) were identified based on clustering of observations (Fig1; B). C1 (n=16,063), mean age=46 years, characterized low rate of hypertension (14%) and PD (15%); none had obesity, kidney dysfunction, DM, CVD or dyslipidemia. C2 (n=750; mean age 51 years) had the highest proportions with gout (7.1%) and kidney dysfunction (100%), with no record of DM, CVD or use of diuretics. C3 (n=528; mean age=48 years) had the highest rates of CVD (100%) PD (22%), smoking (74%) and alcohol risk behaviour (41%). C4 (n=3673; mean age=47 years) had the highest percentage of males (75%), the highest BMI (25.91) and the greatest proportions with obesity (34%) and dyslipidemia (74%), regular smoking (65%) and alcohol risk behaviour (36%). C5 (n=1043; mean age=48 years) had by far the highest occurrence of DM (51%), frequent use of diuretics (52%), hypertension (54%) and the highest percentage of abnormal liver enzyme levels (16%).

Conclusion: Definition of clusters of comorbidities and lifestyle factors closely associated with gout, identified five separate "pathways" in this large health survey of the general population. "Pathways" relates to life-style, metabolism and specific comorbidity patterns. Further analyses will be performed to elucidate how these clusters predict diagnosed gout in this population.

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Disclosure of Interests: Tahzeeb Fatima: None declared, Peter Nilsson: None declared, Carl Turesson: None declared, Mats Dehlin: None declared, Nicola Dalbeth Grant/research support from: Amgen, AstraZeneca, Consultant for: Horizon, Hengrui, Kowa, Speakers bureau: Pfizer, Horizon, Janssen, AbbVie, Lennart T.H. Jacobsson Consultant for: LJ has received lecture and consulting fees from Pfizer, Abbvie, Novartis, Eli-Lilly and Janssen, Meliha C Kapetanovic: None declared

DOI: 10.1136/annrheumdis-2019-eular.5642

FRI0671

SURVEY OF POTENTIAL TOXIC EXPOSURE IN PATIENTS WITH SYSTEMIC SCLEROSIS IN RESCLE REGISTRY. A PRELIMINARY STUDY

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Background: Systemic sclerosis (SSc) is a systemic autoimmune disease with extremely heterogeneous clinical features and unknown etiology, although numerous studies suggest a relationship with environmental and occupational factors. So far there is little information on whether toxic substances can play a relevant role in its phenotypic expression (1).

Objectives: To analyze in a cohort of patients with SSc the proportion of patients exposed to toxic and their correlation with epidemiologic, clinical and serological data.

Methods: A survey was conducted aimed at the knowledge of the working life of patients from six centers belonging to the Spanish Scleroderma Registry (RESCLE), categorizing them in six groups: no potential exposure to toxic substances, potential exposure to silica, to hydrocarbons, to organic solvents, to mixed toxics (silica and/or hydrocarbons and/or organic solvents) and to another toxics. In all patients 87 epidemiological, clinical and analytical variables included in the registry were analyzed, carrying out a comparative study between groups.

Results: 225 SSc patients were selected. Of these, 81 patients (36%) had worked in professions with potential risk of toxic exposure, 64 women out of the 227 included (28%) and 17 men out of the 28 included (60%). The toxic agent most frequently involved was silica in 29 patients (35.8%), followed by hydrocarbons in 21 (25.9%), mixture of toxic

substances in 21 other patients (25.9%), organic solvents in 4 patients (4.9%) and other toxic in 6 cases (7.4%). Toxic exposure was associated with a lower risk of being female (OR 0.15, $p < 0.001$), having been exposed to tobacco (OR 0.4, p 0.037) and digital ulcers (OR 0.43, p 0.016) and with a greater likelihood of hepatic involvement (OR 3.63, p 0.021), musculoskeletal involvement (OR 2.13, p 0.017) and the slow capillary pattern of Maricq (OR 1.8, p 0.063). Analyzing the exposure groups separately, patients exposed to silica had a lower probability of Raynaud's phenomenon (OR 0.25, p 0.005) and a higher probability of diagnosis at older ages (OR: 1.04, p 0.005), presence of Topoisomerase I antibody (OR 3.71, p 0.023) and slow capillary pattern of Maricq (OR 4.15, p 0.008). Patients exposed to hydrocarbons had an increased risk of liver involvement (OR 5.34, p 0.029).

Conclusion: In our cohort of 225 patients with SSc, 60% of male patients and 28% of women worked in a profession with a potential risk of toxic exposure. In this preliminary study, important differences were observed in the probability of a different phenotypic expression of the SSc according to the history of occupational exposure to toxins. Studies with a larger number of patients are needed to establish these associations in a solid way.

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.3648

FRI0672 INCIDENCE OF GIANT CELL ARTERITIS IN 6 DISTRICTS OF PARIS, FRANCE (2015–2017)

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Background: Little is known about the current incidence of giant cell arteritis (GCA) in France.

Objectives: We conducted a prospective, population-based survey over 3 years to estimate the incidence of GCA in inhabitants of Paris, France.

Methods: From January 2015 to December 2017, new GCA diagnoses in 6 districts of northeastern Paris (257,888 inhabitants ≥ 50 years old) were prospectively identified by 1) biannual postal mails to 1,134 general practitioners and other specialists practicing in the study area; 2) quarterly e-mail surveys among 28 hospital departments located in or close to the study area and 3) new records in the National Health Insurance System database with code M31 (other necrotizing vasculopathies) in the International Classification of Diseases, 10th revision. Clinical data of notified cases were retrieved from medical records. Retained cases lived in the study area at the time of diagnosis, fulfilled the 1990 American College of Rheumatology classification criteria and/or were ≥ 50 years old, with imaging or histology evidence of large-vessel inflammation and increased levels of inflammatory biomarkers. Clinical presentations with no cranial symptoms were classified as large-vessel GCA and otherwise as cranial GCA. Annual incidence rates were calculated by dividing the number of incident cases by the size of the study population and the study period (in years); 95% confidence intervals (CIs) were calculated by using the Poisson distribution. Completeness of case ascertainment was assessed by a three-source capture-recapture analysis.

Results: Among 61 retained cases (69% females; mean age: 77.1 [SD: 9.0] years), 57 (93%) were cranial GCA and 4 (7%) large-vessel GCA. GCA diagnoses were supported by temporal artery biopsy findings, imaging of the aorta and its main branches, temporal artery ultrasonography and/or aortic tissue histology in 35 (57%), 18 (30%), 7 (11%), and 1 (2%) cases, respectively. GCA incidence rate (per 100,000 inhabitants ≥ 50 years old) was estimated at 7.9 cases (95% CI: 6.0–10.1). Completeness of case ascertainment was estimated at 66% (95% CI: 52–92%).

Conclusion: Our annual incidence estimate of GCA is close to the sole published estimate for another French population established 4 decades ago [1] and adds further support to the lower incidence of GCA in non-

Scandinavian versus Scandinavian populations. Large-vessel GCA cases seem a rare form of GCA as compared with cranial GCA.

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Disclosure of Interests: Solange GONZALEZ-CHIAPPE: None declared, Sarah LECHTMAN: None declared, Carla Maldini: None declared, Arsene Mekinian: None declared, Thomas Papo: None declared, Thomas Sene: None declared, Alfred Mahr Consultant for: Chugai Pharma France, Speakers bureau: Roche SAS Chugai Pharma France
DOI: 10.1136/annrheumdis-2019-eular.6846

FRI0673 RISK OF JOINT SURGERY IN PATIENTS WITH PSORIATIC ARTHRITIS. A REGISTER-BASED TIME SERIES STUDY FROM DENMARK

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Background: The knowledge is limited about use and time trends of joint surgery among patients with psoriatic arthritis (PsA). It is also unknown whether the need for joint surgery has decreased as seen in most Rheumatoid Arthritis populations in the biologic era.

Objectives: To study time trends and cumulative incidence of joint surgery among PsA patients in Denmark from 1996 to 2017 compared to a general population cohort (GPC) in a nationwide register-based study.

Methods: The Danish National Patient Register was used to identify incident PsA patients diagnosed at a department of rheumatology or general internal medicine. We calculated the 5-year incidence rates (IR) and incidence rate ratios (IRR) of joint surgery in 4 calendar-period defined cohorts in Danish PsA patients (1996-2000; 2001-2004; 2005-2008; 2009-2012). Each patient was subsequently matched with up to 10 non-PsA GPCs.

Using the Aalen-Johansen estimator, we calculated the 5, 10 and 15-year cumulative incidences of any joint surgery and joint-sacrificing surgery (arthroplasty and arthrodesis), respectively, for all patients PsA patients diagnosed from 1996 to 2017.

Results: In total, 11 960 PsA patients (mean age 50 years; 57% female) were identified from 1996-2012. The IR of surgery was higher in each PsA calendar cohort compared with their GPC counterpart with an overall IR in PsA of 20.7 (95% CI 19.3-22.1) and GPC 9.9 (95% CI 9.6-10.2) from 1996-2012 (Table 1). Comparing PsA with GPC cohorts across calendar periods, the IRR for any joint surgery decreased slightly from 2.4 (95%CI 2.0 to 2.9) in 1996-2000 to 2.0 (95%CI 1.7 to 2.2) in 2009-2012. Among PsA patients diagnosed between 1996 and 2017, the 5, 10, and 15-year cumulative incidences of surgery were 2%, 10%, and 29%, respectively (Figure 1).

Cumulative risk of any first joint surgery (solid lines) and any first joint-sacrificing surgery (dotted lines) among patients with psoriatic arthritis and matched general population controls from 1996-2017

Figure 1

Conclusion: In this study, the 5-year IR of joint related surgery in PsA did not change substantially from 1996 to 2012. The IR remained about twofold higher compared with the general population. Thus, any beneficial